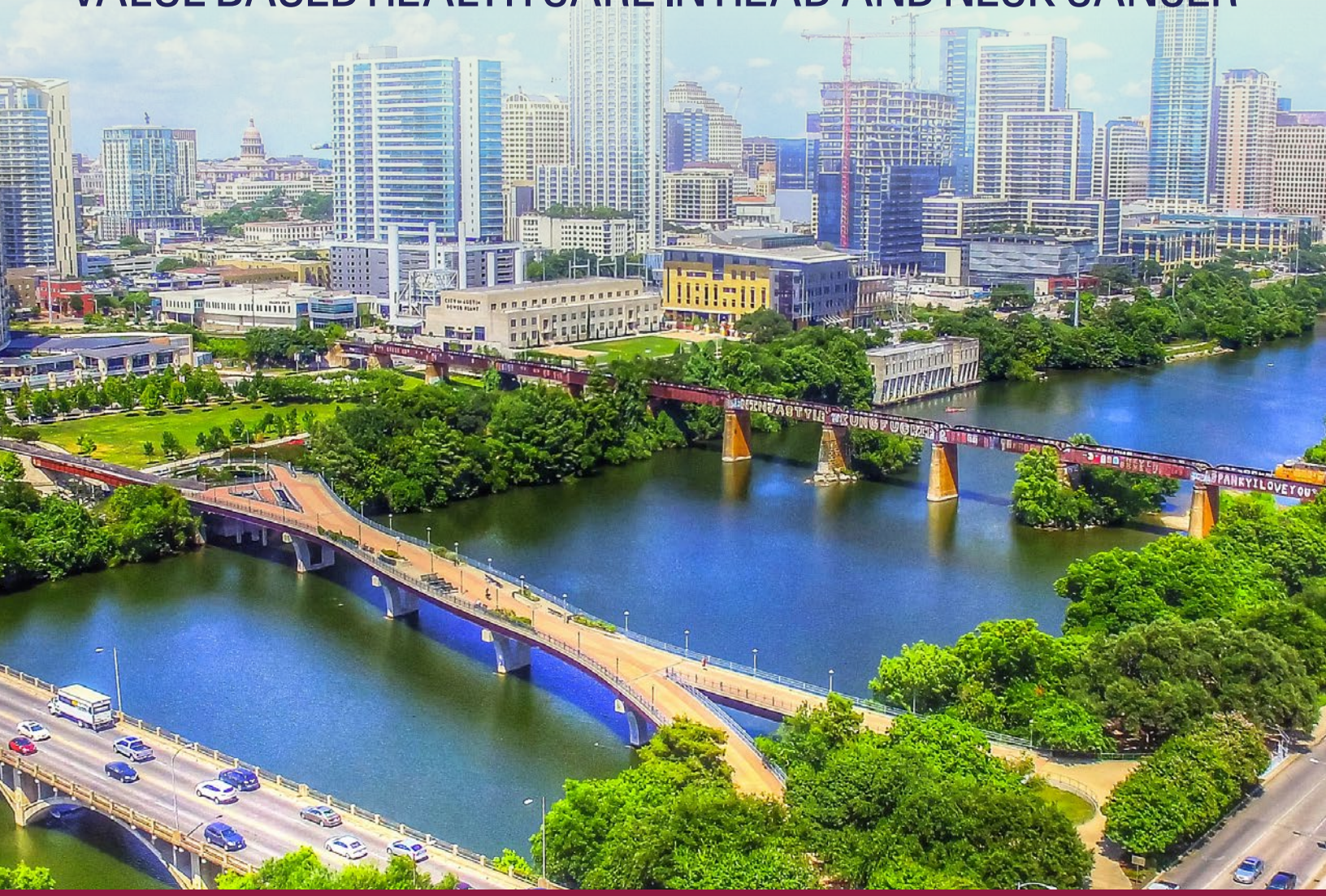
AHNS 2019 Annual Meeting

VALUE BASED HEALTH CARE IN HEAD AND NECK CANCER



FINAL PROGRAM

May 1-2, 2019 • JW Marriott • Austin, Texas

Held During the Combined Otolaryngology Spring Meetings

AHNS President: Ehab Y. Hanna, MD
Program Co-Chairs: Neil D. Gross, MD & Carole Fakhry, MD, MPH

THE RESEARCH AND EDUCATION FOUNDATION OF THE AMERICAN HEAD AND NECK SOCIETY

"If I have seen further than others it is by standing upon the shoulders of giants." This quote is most often attributed to Sir Isaac Newton, but the sentiment has a history dating back to as early as 1159. John of Salisbury used a version of the phrase in a treatise on logic called *Metalogicon.* This astute and humble outlook remains as valid today as when it was first expressed and The Research and Education Foundation of the American Head and Neck Society embodies this sentiment in several ways.

The Foundation was first formed in 1991 under the auspices of then AHNS President, Dr. Jatin Shah. He, along with fellow leaders of the society had a vision for a Foundation, built by the generosity of members that would have the capacity to support meaningful research and recognize great surgical thought leaders. They demonstrated their faith with charitable gifts which became the basis of the Foundation. We stand on their shoulders.

Today the Foundation honors influential colleagues who have contributed much to the advancement of head and neck patient care. The Chris O'Brien Travelling Fellowship Award was created in honor of Prof. O'Brien, a highly accomplished head and neck surgeon who passed away in June 2009 after a long battle with cancer. The Duane Sewell Young Investigator Award pays tribute to Dr. Sewell who was a surgeon-scientist and immunologist on the brink of a great career whose life was cut short by gastric cancer in 2011. These are just two examples of esteemed colleagues, honored by the AHNS Foundation. We stand on their shoulders.

The awards given by the Foundation provide researchers in head and neck cancer funds to develop important projects, which help move forward our understanding and treatment of the diseases from which our patients suffer. Michael Kupferman, MD; Daniel Moskovic, MA; Randal Weber, MD; and Jay Boyle, MD published a manuscript in JAMA detailing the success of the AHNS grant program. In general terms, the grant recipients went on to publish manuscripts on their work, advanced in their careers and received an infusion of funding from other sources based on the initial grant awarded by the society. We stand on their shoulders.

We ask you to join us in honoring the work of those who have gone before us and encourage the work of the next generation of head and neck thought leaders. We hope you will consider a donation of $200. Each contribution lifts us higher, closer to those on whose shoulders we stand.

For more information about the Foundation, or to make your gift today, go to www.ahnsfoundation.info or please come and visit the Foundation's Centurion Club Lounge.

Sincerely,

Dennis Kraus, MD
Foundation Chair

TABLE OF CONTENTS

THANK YOU TO OUR SUPPORTERS

The American Head and Neck Society gratefully acknowledges educational grants in support of the annual meeting from the following organizations:

Astra Zeneca
Bayer
Cook Medical
Johnson and Johnson Medical Devices
Karl Storz Endoscopy
Medtronic
Merck
Pfizer

The American Head and Neck Society gratefully acknowledges educational grants in support of the AHNS Resident and Fellow Thyroid and Parathyroid Surgery Course from the following organization:

Johnson and Johnson Medical Devices

The American Head and Neck Society gratefully acknowledges in-kind contributions in support of the Ultrasound Course from the following organizations:

GE Healthcare
RGS Healthcare

The American Head and Neck Society gratefully acknowledges educational grants in support of the Fellows Transoral Robotic Course from the following organizations:

Intuitive Surgical
Medrobotics

SAVE THE DATE!
AHNS FUTURE MEETING SCHEDULE

AHNS 10th International Conference on Head and Neck Cancer
July 18 - 22, 2020 • Chicago, IL
Hyatt Regency Chicago

AHNS 2021 Annual Meeting Held during the Combined Otolaryngology Spring Meeting (COSM)
April 7 - 11, 2021 • New Orleans, LA
Hyatt Regency New Orleans

The American Head & Neck Society (AHNS)
11300 W. Olympic Blvd., Suite 600
Los Angeles, CA 90064
Phone: (310) 437-0559
Fax: (310) 437-0585
www.ahns.info

The American Head & Neck Society is managed by
BSC Management, Inc.
Phone: (310) 437-0555
Fax: (310) 437-0585
E-Mail: info@bscmanage.com
www.bscmanage.com

Official Language

The official language of the conference is English. Simultaneous translation will not be offered.

GENERAL INFORMATION

The American Head and Neck Society's 2019 Annual Meeting
May 1-2, 2019 • JW Marriott • 110 E 2nd St, Austin, TX 78701

COSM Registration Hours

Grand Ballroom Foyer, Level 4

Tuesday, April 30	12:00 pm - 5:00 pm
Wednesday, May 1	6:30 am - 5:00 pm
Thursday, May 2	7:00 am - 5:00 pm
Friday, May 3	7:00 am - 5:00 pm
Saturday, May 4	7:00 am - 3:00 pm
Sunday, May 5	7:00 am - 10:00 am

COSM Exhibit Hall Hours

Lone Star Ballroom, Level 3

Coffee breaks and lunch will be served in the Exhibit Hall (Wednesday and Sunday excluded).

Thursday, May 2	9:00 am - 4:00 pm
Friday, May 3	9:00 am - 4:00 pm
Saturday, May 4	9:00 am - 4:00 pm

Speaker Ready Room Hours

Room 406, Level 4

Tuesday, April 30	4:00 pm - 8:00 pm
Wednesday, May 1	6:00 am - 6:00 pm
Thursday, May 2	6:00 am - 6:00 pm
Friday, May 3	6:00 am - 6:00 pm
Saturday, May 4	6:00 am - 4:00 pm
Sunday, May 5	6:00 am - 10:00 am

Poster Hall

All posters are displayed in Griffin Hall, Level 2.
View/search all posters via the App or COSM's Poster Archive via www.cosm.md.

Wednesday, May 1	1:00 pm - 7:00 pm
Thursday, May 2	9:00 am - 7:00 pm
1st Combined Poster Reception	
Thursday, May 2	5:30 pm - 7:00 pm

AHNS Centurion Club Lounge

Room 306, Level 3

Wednesday, May 1, 2019	7:00 am - 5:00 pm
Thursday, May 2, 2019	7:00 am - 5:00 pm

Questions? Comments?
Join the conversation behind the scenes …
Tweet! #AHNS2019 **Follow us** @AHNSinfo

GENERAL INFORMATION

AHNS 2019 ANNUAL MEETING EDUCATIONAL OBJECTIVES

At the conclusion of the activity, participants will be able to:

1. Better evaluate interventions in relation to their value in the management of head and neck cancer patients.
2. Discuss the value proposition for proton vs. intensity-modulated radiation therapy (IMRT) in cancers of the oropharynx, skull base and salivary glands.
3. Articulate the fundamentals of immunotherapy relative to value in the management of the head and neck cancers.
4. Recognize the expected quality of life outcomes in skull base surgery.
5. Differentiate between the current trends and practices in endocrine disease treatment relative to quality and value.
6. Discuss treatment protocols for advanced larynx cancer.
7. Discriminate between the modalities to diagnosis HPV-positive/HPV-negative mucosal disease of the head and neck.
8. Interpret how value based head and neck cancer care affects patient quality, outcomes and economics of practice.
9. Identify differences in remote access thyroidectomy versus traditional open approach.
10. Review the nuances for the meaning of traditional high-risk factors in HPV-positive oropharynx cancer.
11. Discuss the role of sentinel lymph node in cutaneous squamous cell cancer and melanoma.
12. Debate the role of biomarker in treatment of salivary gland cancers.

AHNS 2019 CME CREDIT CLAIM PROCESS

Please use the worksheet on page 23 to track the number of CME hours you attend for each activity. After the meeting, an email will be sent to attendees with a link to the on-line survey and claim form.

For any questions, please contact christines@ahns.info.

TO RECEIVE YOUR CME CREDIT:

AHNS has instituted a process for claiming CME credits and printing certificates. All attendees wishing to receive a CME certificate for activities attended at the AHNS 2019 Annual Meeting must first complete an on-line meeting evaluation form. An email will be sent to attendees with a link to the on-line survey and claim form.

ATTENDANCE CERTIFICATES

General certificates of attendance will be emailed to participants upon request. Please contact christines@ahns.info for your certificate. Note, this will not include your claimed CME credits.

AMERICAN HEAD & NECK SOCIETY STATEMENT OF PROFESSIONALISM AND ETHICS

The American Head and Neck Society is committed to promulgating and promoting professionalism and ethical behavior in its membership. As members, we value the trust placed in us by our patients, colleagues and society, and therefore willingly pledge to uphold the ethical and professional principles and virtues of medicine as outlined below.

We have a fundamental and sacred duty to our patients. Therefore, we will:

- Recognize that the welfare of our patients is the paramount priority.
- Serve as advisors to our patients to help them navigate complex medical decisions.
- Discuss the risks, benefits and alternatives of appropriate therapeutic options.
- Be respectful of our patients' viewpoints and beliefs.
- Support our patients physically, emotionally and spiritually.
- Care for and support our patients at the end of life.
- Offer support and care to our patients' families.
- Strive to enhance and maximize our clinical, surgical and interpersonal competence.
- Maintain a caring and respectful demeanor.

We have a responsibility to our colleagues and teachers. Therefore, we will:

- Willingly acknowledge our skills and expertise to those wishing to learn.
- Honor our teachers for devoting their time and energy on our behalf.
- Assist our colleagues, technically, intellectually, emotionally and spiritually.
- Respect our colleagues from other disciplines and practice multidisciplinary care.
- Provide legal opinions based only on evidenced-based practice and standards of care.
- Offer care without regard to gender, age, religion, sexual orientation, socioeconomic status or ethnicity.

We also have an obligation to the faith entrusted in us by society. Therefore, we will:

- Perform self regulation by developing and adhering to professional, ethical and evidence-based practice standards.
- Disclose and limit conflict of interest.
- Practice medicine honestly, compassionately and confidentially.
- Educate the public within the bounds of our expertise.

AMERICAN HEAD & NECK SOCIETY

Mission

The mission of the AHNS is to advance Education, Research, and Quality of Care for the head and neck oncology patient

Why Join AHNS?

The American Head and Neck Society is an organization of physicians, scientists and allied health professionals dedicated to improving the understanding of Head and Neck Cancer and the care of patients afflicted with that disease. Membership is open to a wide variety of interested individuals in several categories that differ both in terms of responsibility and level of involvement in the society.

Benefits of AHNS Membership

- *Member rates on all meeting registration fees*
- *Interaction with our worldwide network of surgeons, physicians and health care professionals dedicated to the prevention and treatment of head and neck cancer*
- *Ability to apply for research grant awards*
- *Opportunity to participate on services and in leadership positions*

Membership Categories:

Active	Associate	Candidate	Corresponding
(Physician)	*(RN, PA, Etc...)*	*(Resident, Fellow)*	*(International)*

For more information about AHNS membership, and to apply:
Please visit our website at www.ahns.info/member-central
Questions? Call +1-310-437-0559, ext. 126

ABOUT THE AMERICAN HEAD AND NECK SOCIETY

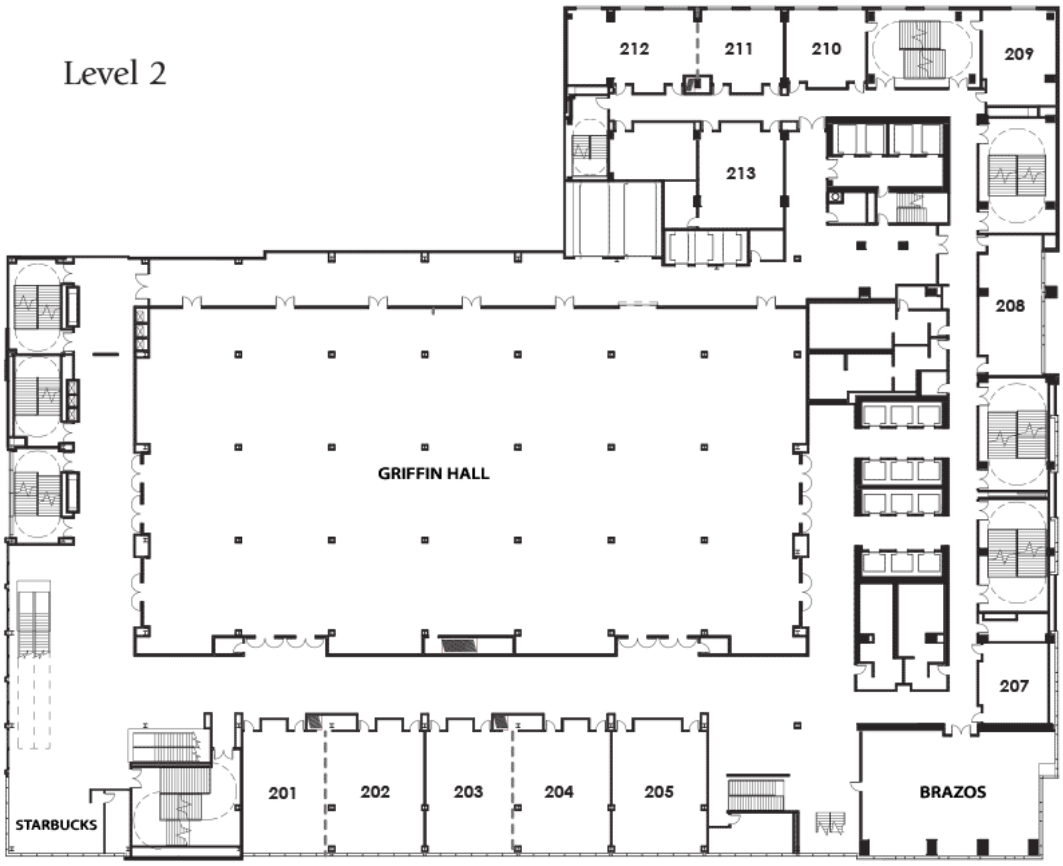
History of the Society

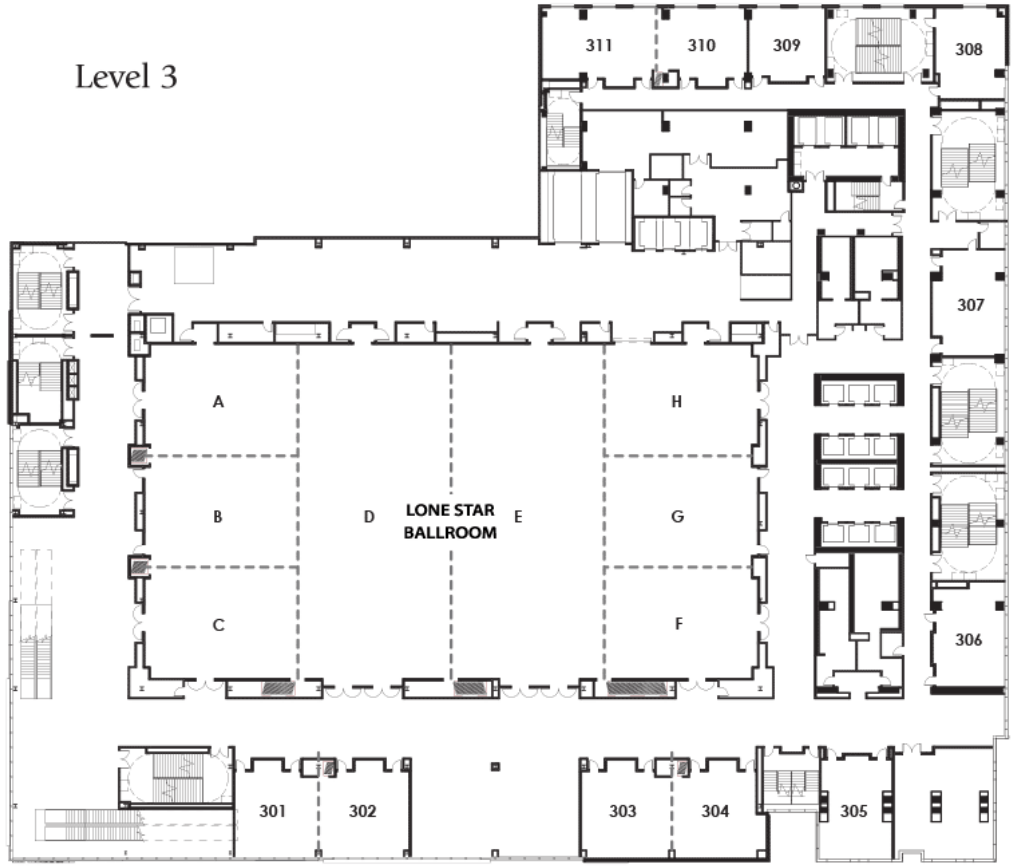
On May 13, 1998, The American Head and Neck Society (AHNS) became the single largest organization in North America for the advancement of research and education in head and neck oncology. The merger of two societies, the American Society for Head and Neck Surgery and the Society of Head and Neck Surgeons, formed the American Head and Neck Society.

The contributions made by the two societies forming the AHNS are significant in the history of surgery in the United States. Dr. Hayes Martin conceived the Society of Head and Neck Surgeons in 1954, a surgeon considered by many to be the "father of modern head and neck tumor surgery." The purpose of the society was to exchange and advance the scientific knowledge relevant to the surgery of head and neck tumors (exclusive of brain surgery) with an emphasis on cancer of the head and neck. Two years later, The American Society for Head and Neck Surgery was organized with the goal to "facilitate and advance knowledge relevant to surgical treatment of diseases of the head and neck, including reconstruction and rehabilitation; promote advancement of the highest professional and ethical standards as they pertain to the practice of major head and neck surgery; and to honor those who have made major contributions in the field of head and neck surgery, or have aided in its advancement".

The new Society remains dedicated to the common goals of its parental organizations.

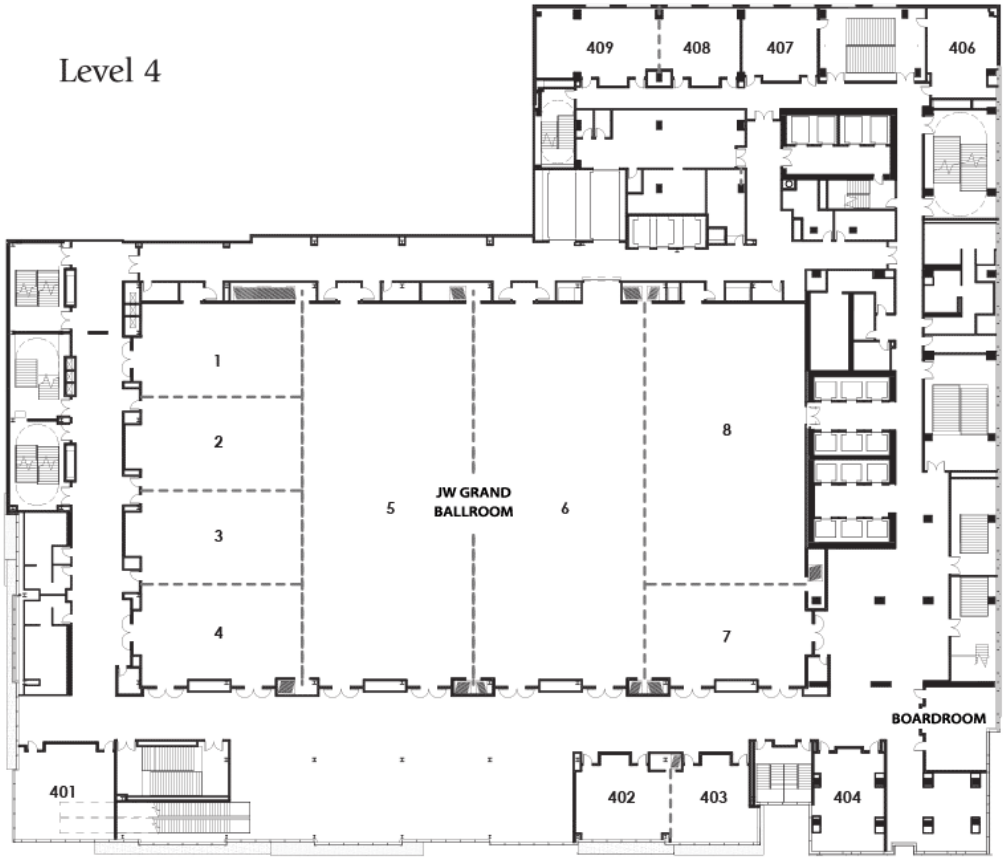
JW MARRIOTT FLOOR PLANS



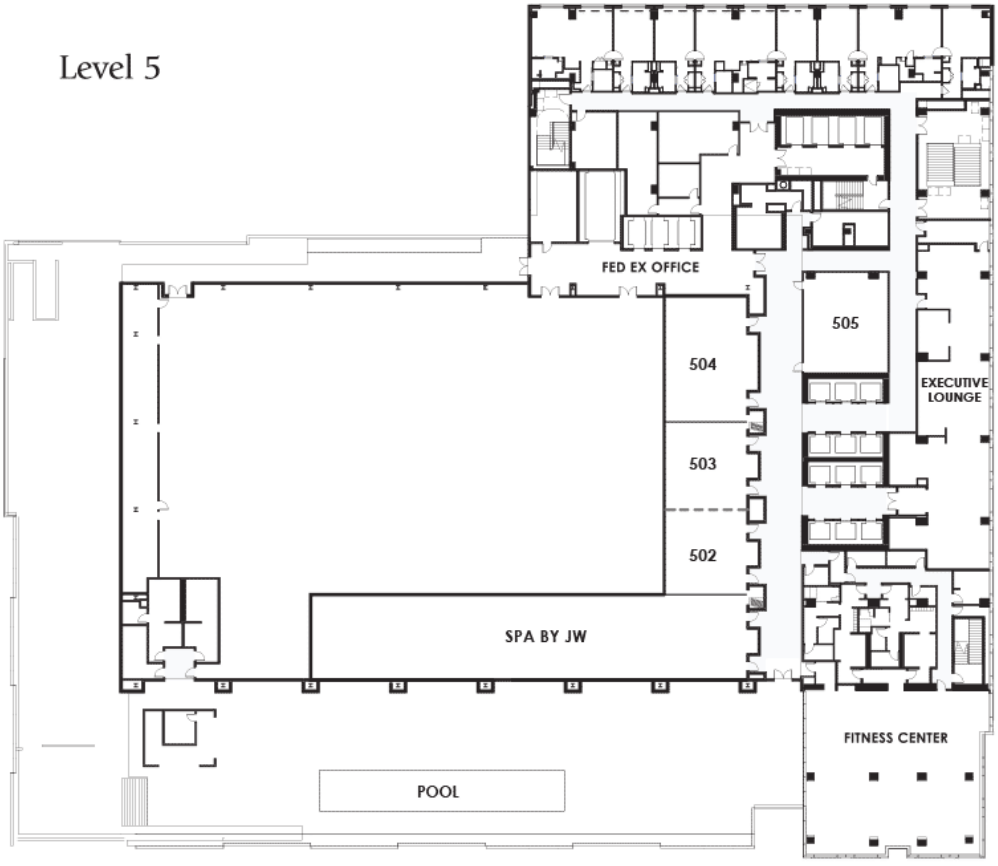


JW MARRIOTT FLOOR PLANS

Level 4



Level 5



AHNS PRESIDENT

Ehab Y. Hanna, MD, FACS

Ehab Hanna, MD, FACS, is an internationally recognized head and neck surgeon and expert in the treatment of patients with skull base tumors and head and neck cancer. A native of Egypt, Dr. Hanna earned his medical degree, and completed a residency in Otolaryngology-Head and Neck Surgery in Cairo, Egypt. In 1988, he immigrated to the United States where he completed a surgery internship at Vanderbilt University Medical Center, and residency in Otolaryngology-Head and Neck Surgery at The Cleveland Clinic Foundation. He then pursued advanced fellowship training in skull base surgery and head and neck surgical oncology at the University of Pittsburgh Medical Center. In 1994 he was appointed as faculty in the department of Otolaryngology Head and Neck Surgery at the University of Arkansas for Medical Sciences where he quickly rose to the rank of full Professor. He was then recruited to MD Anderson in 2004 to lead their Skull Base Tumor program and the Multidisciplinary Head and Neck Center.

Dr. Hanna is currently a Professor and Vice Chair of the Department of Head and Neck Surgery with a joint appointment in the Department of Neurosurgery, MD Anderson Cancer Center. He also serves as an Adjunct Professor of Otolaryngology and Head and Neck Surgery at Baylor College of Medicine. He is the medical director of the Multidisciplinary Head and Neck Center and director of the Skull Base Tumor program. For the last 15 years, Dr. Hanna has consistently been named one of America's Best Doctors and Top Doctors in Cancer.

In addition to patient care, Dr. Hanna is actively engaged in clinical and translational research with emphasis on skull base tumors. He authored over 350 publications including peer-reviewed manuscripts (170), invited articles, book chapters, and editorials. He co-edited three major textbooks on Cancer of the Head and Neck, Cancer of the Larynx, and Comprehensive Management of Skull Base Tumors.

He is the Editor-in-Chief of the journal of Head & Neck, which is the official journal of the International Federation of Head and Neck Societies and the International Academy of Oral Oncology. Dr. Hanna served as the President of the North American Skull Base Society (2013-2014) and the President of the American Head and Neck Society (2018-2019).

2019 PROGRAM CO-CHAIRS

Neil D. Gross, MD

Neil D. Gross, M.D., FACS, is a dedicated surgeon and scientist with a passion for service, individualized cancer care and cancer research. Dr. Gross completed his undergraduate training at Washington University in St. Louis followed by medical school at Oregon Health and Science University (OHSU). He finished his surgical internship at Mt. Sinai Medical Center in New York and then returned to OHSU for residency training. Dr. Gross completed a head and neck surgery and oncology fellowship at Memorial Sloan Kettering Cancer Center before joining the faculty at OHSU where he served as director of head and neck clinical trials and developed a national reputation as a leader in transoral robotic surgery (TORS).

Dr. Gross currently serves as Professor and Director of Clinical Research in the Department of Head and Neck Surgery at MD Anderson Cancer Center. His clinical interests include the management of all head and neck malignancies, with a particular focus on human papillomavirus (HPV)-associated cancers of the oropharynx and aggressive cutaneous squamous cell carcinoma. His research is focused on the development and execution of surgeon-led clinical trials. He also maintains a strong interest in head and neck outcomes research, in addition to investigating novel therapies and techniques in head and neck cancer. Dr. Gross has served in many service and leadership roles nationally, including AHNS. In addition to serving as the 2019 AHNS program co-chair, he is currently co-director of the AHNS Fellow's TORS Curriculum.

Carole Fakhry, MD, MPH

Dr. Fakhry is a head and neck surgical oncologist at Johns Hopkins. After an undergraduate degree at Stanford University, she completed medical school, residency in otolaryngology head and neck surgery and fellowship in head and neck surgical oncology at Johns Hopkins. She has also received a masters in public health from the Johns Hopkins Bloomberg School of Public Health. She is presently Associate Professor in the Johns Hopkins Department of Otolaryngology Head and Neck Surgery. She is director of the head and neck group in the Bloomberg~Kimmel Institute for Cancer Immunotherapy, the head and neck surgical oncology fellowship and department fellowships. She is associate editor for Oral Oncology and serves on several editorial boards. Her research interest focuses on the role of human papillomavirus (HPV) in head and neck squamous cell cancer. She has demonstrated that the presence of HPV confers a prognostic advantage to individuals with oropharyngeal cancer and that HPV is associated with unique clinical characteristics. In addition to the clinical implications of HPV in head and neck cancer, she is co-principal investigator of a large study to understand screening individuals at "high-risk" of malignancy and evaluating imaging modalities to improve diagnostics and early detection of HPV- related head and neck cancer.

HAYES MARTIN LECTURE

Admiral William H. McRaven

Admiral William H. McRaven, is a retired U.S. Navy Four-Star admiral and the former Chancellor of the University of Texas System. During his time in the military, he commanded special operations forces at every level, eventually taking charge of the U.S. Special Operations Command. His career included combat during Desert Storm and both the Iraq and Afghanistan wars. He commanded the troops that captured Saddam Hussein and rescued Captain Phillips. McRaven is also credited with developing the plan and leading the Osama bin Laden mission in 2011.

As the Chancellor of the UT System he led one of the nation's largest and most respected systems of higher education. As the chief executive officer of the UT System, McRaven oversaw 14 institutions that educated 220,000 students and employed 20,000 faculty and more than 80,000 health care professionals, researchers, and staff.

McRaven is a recognized national authority on U.S. foreign policy and has advised Presidents George W. Bush, Barack Obama and other U.S. leaders on defense issues. He currently serves on the Council on Foreign Relations (CFR) and the National Football Foundation.

McRaven has been recognized for his leadership numerous times. In 2011, he was the first runner-up for TIME magazine's "Person of the Year." In 2012, Foreign Policy magazine named McRaven one of the nation's "Top 10 Foreign Policy Experts." In 2014, Politico magazine named McRaven one of the "Politico 50", citing his leadership as instrumental in cutting though Washington bureaucracy. In 2015, he received the Intrepid Freedom Award for his distinguished service in defending the values of democracy. In 2016, McRaven was named the recipient of the Ambassador Richard M. Helms Award by the CIA Officers' Memorial Foundation. This year, 2018, he will be receiving the Judge William H. Webster Distinguished Service Award for a lifetime of service to the nation.

McRaven graduated from The University of Texas at Austin in 1977 with a degree in Journalism, and received his master's degree from the Naval Postgraduate School in Monterey in 1991.

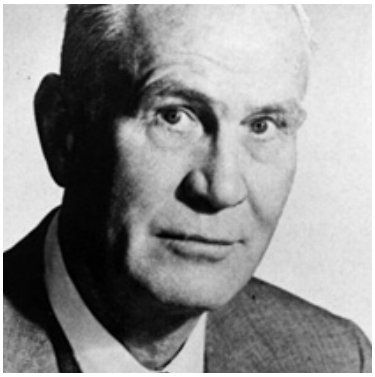
McRaven is the author of two books, SPEC OPS: Case Studies in Special Operations Warfare and Make Your Bed: Little Things That Can Change Your Life and Maybe the World, based on his 2014 UT Commencement Speech that received worldwide attention.

He met his wife, Georgeann, while they were students at UT Austin, and they have three grown children. McRaven stays active with his writing, speaking and board commitments.

Past Hayes Martin Lecturers

Adalsteinn D. Brown, PhD (2018)
Mark K. Wax, MD (2017)
Ashok R. Shaha, MD (2016)
John A. Ridge, MD, PhD (2015)
Patrick J. Gullane, MD (2014)
Jonas T. Johnson, MD (2013)
Gregory T. Wolf, MD (2012)
Randal S. Weber, MD (2011)
Adel El-Naggar, MD (2010)
Charles W. Cummings, MD (2009)
Waun Ki Hong, MD (2008)
Jesus E. Medina, MD (2007)
Keith S. Heller, MD (2006)
Richard K. Reznick, MD, MEd (2005)
Christopher J. O'Brien, MD (2004)
Michael Johns, MD (2003)
Eugene Myers, MD (2002)
William Wei, MS (2001)
Robert M. Byers, MD (2000)
Jean-Louis H. LeFebvre, MD (1999)
Jatin P. Shah, MD (1998)
Blake Cady, MD (1997)
Joseph N. Attie, MD (1996)
Helmuth Goepfert, MD (1995)
John G. Batsakis, MD (1994)
Ronald H. Spiro, MD (1993)
John M. Lore, MD (1992)
Ian Thomas Jackson, MD (1991)
Alando J. Ballantyne, MD (1990)
George A. Sisson, MD (1989)
M.J. Jurkiewicz, MD (1988)
Elliot W. Strong, MD (1987)
Donald P. Shedd, MD (1986)
Alfred S. Ketcham, MD (1985)
William A. Maddox, MD (1984)
John J. Conley, MD (1983)
Milton Edgerton, MD (1982)
Richard H. Jesse, MD 1981)
Condict Moore, MD (1980)
Edward F. Scanlon, MD (1979)
Harvey W. Baker, MD (1978)
Harry W. Southwick, MD (1977)
Edgar L. Frazell, MD (1976)
Charles C. Harrold, MD (1975)
Arthur G. James, MD (1974)
Oliver H. Beahrs, MD (1973)
William S. MacComb, MD (1972)

HAYES MARTIN BIOGRAPHY



Hayes Martin, MD

Hayes Martin was born in Dayton, a small town in north central Iowa. He attended the University of Iowa at Iowa Falls before being accepted to the medical school in 1913 on the same campus, finishing 4 years later in a class of 20.

World War I began in April 1917 while Hayes was in his final year of medical school. Many of his classmates at the medical school were in the Army ROTC units; however, Dr. Martin opted for the Navy, which he joined on the day America entered the war. He traveled to Europe on the USS Arkansas and was assigned to his permanent duty station at the U.S. Navy Air Station, La Trinite Sur Mer, France – a small seaside village on the southern coast of Brittany. The purpose of this base was antisubmarine warfare using blimps and kite balloons. Dr. Martin was made commanding officer of the air station for a brief period of time when the line officer in charge had become ill; it was a unique position for a medical officer in the Navy to take command during wartime.

After the war, Dr. Martin returned to the U.S and sought out an internship at the old Poly Clinic Hospital in New York City, which was temporarily made into a Veteran's Administration hospital. Part of his internship was spent at Bellevue in the fourth surgical division, where he felt he would have the best possible training in general surgery. The chief of the second division was John A. Hartwell, MD, the distinguished surgeon memorialized by the Fellow's Room in the library of the New York Academy of Medicine. Dr. Hartwell suggested that Dr. Martin go to Memorial Hospital to learn about cancer.

Dr. Martin received an internship at Memorial in the summer of 1922 and stayed on as a resident until 1923. He then had two years at the second surgical service at Bellevue, where he operated to his heart's content and got the surgical education he so strongly desired. Once he finished his residency, Dr. Martin returned to Memorial where he joined as clinical assistant surgeon on the staff.

Dr. Martin made the use of aspiration biopsy on all solid tumors popular throughout Memorial. Now, this procedure is done throughout the world. Dr. Martin co-authored the first report on the subject published in the Annals of Surgery. Numerous other articles followed, including Dr. Martin's two most famous publications, "Cancer of the Head and Neck," published in two issues of the Journal of the American Medical Association in 1948, and "Neck Dissection," appearing in Cancer in 1951. These two papers were so extensively requested that the American Cancer Society made reprints by the thousands available to those who requested them as many as 20 years after publication. Dr. Martin's bibliography encompasses more than 160 articles.

In 1934, Dr. Martin was appointed Chief of the Head and Neck Service at Memorial Hospital. It wasn't until 1940 that surgery began to take over as the treatment of choice for the majority of cancers of the head and neck. In that year, the beginnings of improved anesthesia permitted advances in surgery. Later, during World War II, antibiotics became available and surgery began to dominate much of head and neck cancer management. Dr. Martin wrote extensively on many subjects, most within the realm of head and neck surgery. His ideal was to be the complete head and neck surgeon and he treated a wide variety of head and neck abnormalities. His book, Surgery of the Head and Neck Tumors, was published in 1957.

Dr. Martin retired from active practice in 1957 at the age of 65. He performed his last operation at Memorial Hospital, assisted by Dr. Elliot Strong, in October 1959, but continued to see patients in his office until he passed away in 1977.

JOHN J. CONLEY LECTURE

Michael Porter, MBA, PhD

Michael Porter is an economist, researcher, author, advisor, speaker and teacher. Throughout his career at Harvard Business School, he has brought economic theory and strategy concepts to bear on many of the most challenging problems facing corporations, economies and societies, including market competition and company strategy, economic development, political competition, the environment, and health care. His approach is based on understanding the overall economics and structure of complex systems, in contrast to particular elements or parts. His extensive research is widely recognized in governments, corporations, NGOs, and academic circles around the globe. His research has received numerous awards, and he is the most cited scholar today in economics and business. While Michael Porter is at the core a scholar, his work has achieved remarkable acceptance by practitioners across multiple fields.

Dr. Porter's initial training was in aerospace engineering at Princeton University. He then earned an M.B.A. from Harvard Business School and a Ph.D. in Business Economics from Harvard's Department of Economics. His research approach—applying economic theory and competition thinking to complex systemic problems—reflects these multidisciplinary foundations. In 2000, Harvard Business School and Harvard University jointly established the Institute for Strategy & Competitiveness to provide a home for his research.

Research & Scholarship

Michael Porter's early work was on industry competition and company strategy, where he was the pioneer in utilizing economic theory to develop a more rigorous understanding of industry competition and the choices companies make to compete. In addition to advancing his home field of industrial organization economics, Michael Porter's work has defined the modern strategy field. His ideas, published in books and articles including Competitive Strategy (1980), Competitive Advantage (1985), and What is Strategy (1996) are taught in virtually every business school in the world as well as extensively in economics and other disciplines. He continues to write about competition and strategy today. His two Harvard Business Review articles, How Smart, Connected Products Are Transforming Competition (November 2014), and How Smart, Connected Products Are Transforming Companies (October 2015) address the role of information technology in strategy. Dr. Porter's original work on industry structure, the value chain, and strategic positioning has informed much of his other research.

Dr. Porter next turned to economic development and competitiveness, where his work focused on the microeconomic underpinnings of national and regional economic development. His book The Competitive Advantage of Nations (1990) was the initial foundation of this body of work. This large body of work includes numerous theoretical and empirical papers on the concept of clusters and their impact on economic performance. He also created the Cluster Mapping Project, http://www.clustermapping.us/, which pioneered the rigorous measurement of economic geography and has become the standard in the U.S., Europe, and a growing number of other countries. His theories are widely applied by both government policymakers and economic development practitioners globally.

Since 2011, as co-chair of the multiyear, non-partisan U.S. Competitiveness Project at Harvard Business School, Michael Porter has leveraged his expertise on competition and strategy to analyze the disappointing performance of the American economy. Dr. Porter's fact-based effort has identified the structural causes of the long-term decline in U.S. competitiveness, as well as the steps needed by business and government to restore economic growth and shared prosperity (2016, Problems Unsolved and a Nation Divided, with Jan Rivkin, Mihir Desai, and Manjari Raman). As dysfunction in Washington continues to deliver poor results and high dissatisfaction with the U.S. political system, Dr. Porter has applied the lens of competitive forces in industry to uncover its root cause—failure of political competition—and proposed reforms necessary to align the political system with the public interest (2017, Why Competition in the Politics Industry Is Failing America, with Katherine Gehl).

In environmental policy, Dr. Porter proposed the "Porter Hypothesis" in the early 1990s, which put forward the novel theory that strict environmental standards were not in conflict with company profitability or national competitiveness, but could enhance both. The Porter Hypothesis has given rise to several hundred scholarly articles in the literature on environmental economics.

Dr. Porter also developed a body of work on the role of corporations in society. His ideas have changed the way companies approach philanthropy and corporate social responsibility. His 2011 paper with Mark Kramer introduced the concept of creating shared value that shows how capitalism itself can be the best route to real solutions to many social problems. Michael Porter also led the development of the conceptual framework underlying the Social Progress Index, http://www.socialprogressimperative.org/, the most comprehensive effort ever to measure social progress. First released in 2014 and now covering 133 countries, the Index rigorously measures each country's social progress across multiple dimensions to complement traditional measurement focused solely on economic performance and GDP per capita.

Finally, since the early 2000s, Michael Porter has devoted considerable attention to the economics of health care, with a focus on building the intellectual framework for realigning the delivery of health care to maximize value to patients (patient health outcomes achieved per dollar spent). First in Redefining Health Care (2006, with Elizabeth Teisberg), and then through a series of articles including What is Value in Health Care (2010), The Strategy That Will Fix Health Care (2013, with Thomas Lee), and How to Pay for Health Care (2016, with Robert Kaplan), Dr. Porter has pioneered the core concepts, collectively known as value-based health care delivery, for reorganizing health care delivery organizations around patient value, measuring patient outcomes, understanding the actual cost of care by medical condition, designing value-based reimbursement models, and

JOHN J. CONLEY LECTURE

integrating multi-location health systems, among others. Value-based health care is diffusing rapidly in the literature and among practitioners. Additionally, together with Dr. Jim Kim and Dr. Paul Farmer, Michael Porter has developed a body of thinking and case studies on health care delivery in resource poor settings (2013, "Redefining Global Health Care," The Lancet)

Other Activities & Honors

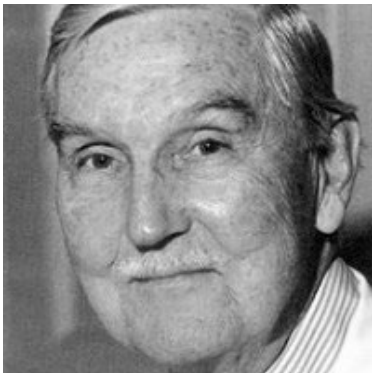
Michael Porter has taught generations of students at Harvard Business School and across the entire University, as well as business, government, and health care leaders from around the world. He serves as an advisor to business, government, and the social sector. He has been strategy advisor to leading U.S. and international companies, served on Fortune 500 public boards, and played an active role in U.S. economic policy at the federal and state levels. He has worked with heads of state from around the world on economic development strategy.

Michael Porter has founded or co-founded four non-profit organizations growing out of his scholarly work: The Initiative for a Competitive Inner City, which addresses economic development in distressed urban communities; the Center for Effective Philanthropy, which creates rigorous tools for measuring foundation effectiveness; FSG, a leading non-profit strategy firm conducting research and advising corporations, NGOs, and foundations on improving social value creation; and the International Consortium for Health Outcomes. Measurement (ICHOM), which develops and publishes global standard sets of patient outcome by medical condition and drives their adoption and benchmarking globally.

Michael Porter is the author of nineteen books and more than 130 articles. He has won many scholarly awards and honors including the Adam Smith Award of the National Association of Business Economists, the John Kenneth Galbraith Medal, the David A. Wells Prize in Economics from Harvard, and the Academy of Management's highest award for scholarly contributions to management. He is also an unprecedented seven- time winner of the McKinsey Award for the best Harvard Business Review article of the year. In 2016, he was awarded the Sheth Medal for enduring and transformational contributions to marketing scholarship and marketing practice.

Professor Porter is the recipient of twenty-three honorary doctorates and several national and state honors. He received the first ever Lifetime Achievement Award from the U.S. Department of Commerce for his contribution to economic development, and has been elected an Honorary Fellow of the Royal Society of Edinburgh and other honorary societies. In 2000, he was named a University Professor by Harvard University, the highest recognition that can be awarded to a Harvard faculty member. For further information, see the web site of the Institute for Strategy and Competitiveness (www.isc.hbs.edu).

JOHN J. CONLEY BIOGRAPHY



Although he looked and sounded like an English nobleman, Dr. John Conley was born in Carnegie, Pennsylvania, a small steel mill town just outside of Pittsburgh. He graduated from the University of Pittsburgh and later its school of medicine. He interned at Mercy Hospital in Pittsburgh. During that year, the nuns who ran the hospital suggested that Dr. Conley take a residency in cardiology and come back to Mercy as their cardiologist.

He went to Kings County Hospital in Brooklyn, a very busy city hospital with a huge patient population. Shortly after he began his training, he had an arrhythmia diagnosed as paroxysmal atrial tachycardia. Little was known about this benign condition at that time. Dr. Conley was told that cardiology was too stressful and that he should go into an easier, less-stressful field with better working hours, like ENT. He did an otolaryngology residency at Kings County Hospital. This was followed by four years of military service during World War II, which included experience in otolaryngology and plastic and reconstructive and maxillofacial surgery in the U.S. Army Medical Corps, both in this country and in the South Pacific theater. Exposure to the construction of war wounds would prove invaluable to him later on in applying these principles to reconstruction following ablative head and neck surgery.

Dr. Conley returned to New York City after the war. He became an assistant and then an associate of Dr. George T. Pack, a technically superb general oncologic surgeon at Memorial Hospital who taught Dr. Conley major ablative surgery of the head and neck. They worked day and night catching up with the backlog of surgery that was neglected during the war years. The combination of his training in otolaryngology, the exposure to ablative surgery, and the World War II experience in reconstructive surgery set the stage for Dr. Conley to evolve his unique approach to head and neck surgery.

Ironically, despite the admonition of the cardiologists about hard work, Dr. Conley did a prodigious amount of major head and neck reconstructive surgery. This proved to be more than ample to provide training to many fellows. His commitment to education is further attested to by the position he held for many years as Clinical Professor of Otolaryngology at the College of Physicians and Surgeons at Columbia University. He loved his appointment at Columbia and particularly his involvement in teaching the residents.

Dr. Conley's vast surgical experience, together with active research interests, led to the authorship of almost 300 contributions to the scientific literature, and eight books. As a result of his productivity and rhetorical eloquence, he was very much in demand as a speaker in this country and abroad. He gave many prestigious eponymous lectures in our field and received many awards for his work, including the Philip H. Hench Award as the Distinguished Alumnus of the University of Pittsburgh School of Medicine, and the DeRoaldes and Newcomb Awards of the American Laryngological Association.

Dr. Conley's contributions to the scientific literature, many technical innovations and surgical experience placed him in the position to receive many honors and important leadership positions, such as President of the American Academy of Otolaryngology and Ophthalmology, member of the Board of Governors of the American College of Surgeons, founding member of the Society of Head and Neck Surgeons, and founding member and first President of the American Society for Head and Neck Surgery. During those years, Dr. Conley used, to the great benefit of us all, his wisdom and diplomacy in carrying out such high-level responsibilities.

Past John J. Conley Lecturers

Brian O'Sullivan, MD, FRCPC, FRCPI, FASTRO (2018)
Johannes Fagan, MBChB, MMed, FCORL (2017)
Robert S. Bell, CM, MSc, MD, FRCSC (2016)
Jonathan Irish, MD, MSc, FRCSC (2015)
Antonio Fojo, MD, PhD (2014)
Patrick J. Gullane, MB, FRCSC, FRACS (2013)
Julie A. Freischlag, MD (2012)
Benjamin S. Carson, Sr., MD (2011)
Robert L. Comis, MD (2010)
James D. Smith, MD (2009)
Carolyn Dresler, MD (2008)
Kenneth I. Shine, MD (2007)
John Stone, MD, MACP (2006)
James F. Battey Jr., MD (2005)
David C. Leach, MD (2004)
Jonathan D. Moreno, MD (2003)
Rabbi David Saperstein (2002)
Edward Hughes, MD (2001)

JATIN P. SHAH SYMPOSIUM: REMOTE ACCESS VERSUS STANDARD THYROIDECTOMY: WHERE IS THE VALUE AND WHO DEFINES IT?

Wednesday, May 1, 2019
7:20 AM - 8:05 AM
Grand 5

A panel of experts will highlight the pros and cons of two remote access approaches versus a traditional "open" transcervical approach for thyroidectomy.

Moderator: Amy Chen, MD, MPH
Debaters: Michael Singer, MD; Yoon Woo Koh, MD, PhD; and Jonathon Russell, MD

JATIN P. SHAH BIOGRAPHY

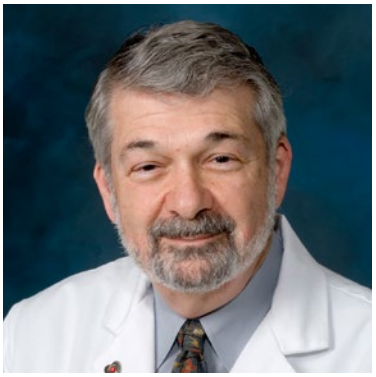
Professor Jatin P. Shah, M.D, graduated from the Medical College of M S University in Baroda, India, and received his training in Surgical Oncology and Head and Neck Surgery at Memorial Sloan Kettering Cancer Center (MSKCC) in New York. He was Chairman of the Department of Head and Neck Surgery at MSKCC for 23 years, and holds The Elliott W. Strong Chair in Head and Neck Oncology and he is Professor of Surgery at Cornell University, in New York.

Dr. Shah is a national and international leader in the field of head and neck surgery having served as president of The New York Cancer Society, The New York Head and Neck Society, The Society of Head and Neck Surgeons, The North American Skull Base Society and the International Academy of Oral Oncology. He founded The International Federation of Head and Neck Oncologic Societies (IFHNOS) in 1986, and serves as its CEO. He also served as Chairman of the AJCC Task force on Head and Neck, and as Chairman of the Joint Training Council of the AHNS. He also served in varying capacities for the American Board of Surgery and the American College of Surgeons. He is listed amongst the Top Doctors in USA directories for 60 times in last 25 years.

He was awarded Honorary Fellowships from The Royal Colleges of Surgeons of Edinburgh, London, Ireland and Australia and Honorary Ph.D. degrees from Belgium and Greece, Honorary D.Sc, from India, the Blokhin Gold Medal from Russia, Sir William Wilde medal from Ireland, and the Ellis Island Medal of Honor from the US. He was inducted to "Living Legends in Oncology" in India. He has been elected as an Honorary member of several Head and Neck Societies in Europe, Asia, Australia, Africa and Latin America. He has delivered over 1,500 scientific presentations worldwide, and over 80 Eponymous lectures at several universities in the United States, Canada, UK, Scotland, Ireland, Sweden, Belgium, Germany, Italy, Spain, Poland, Russia, Croatia, Turkey, Egypt, South Africa, India, China, Korea, Japan, Hongkong, Taiwan, Singapore, Philippines, Indonesia, Thailand, Australia, New Zealand, Argentina, Brazil, Chile, Peru, Ecuador, Venezuela, Panama and Mexico, He has published more than 600 peer reviewed articles and 12 medical textbooks. His text book on Head and Neck Surgery and Oncology won first prize from the British Medical Association, Royal Society of Medicine, and was awarded the George Davey Howells prize from the University of London.

In honor of his outstanding contributions and leadership in head and neck surgery, MSKCC has established , the "Jatin Shah Chair in Head and Neck Oncology', The IFHNOS has established the "Jatin Shah Lecture" at it's World Congresses, and the American Head and Neck Society has established the "Jatin Shah Symposium" at its annual meetings.

GUEST OF HONOR



Harvey M. Tucker, MD

Harvey M. Tucker MD FACS is currently Professor of Otolaryngology/Head and Neck Surgery at Case Western Reserve University School of Medicine.

His B.S. In Zoology is from Bucknell University and M.D. from Jefferson Medical College of Philadelphia. His Fellowship Year in Head and Neck Surgery was with Dr Joseph Ogura at Washington University of St Louis, MO.

He served as Associate Professor of Otolaryngology at Upstate Medical Center, Syracuse, NY until he became Chairman of Otolaryngology and Communicative Disorders at The Cleveland Clinic in 1975. He continued in that position until 1993, when he became Professor of Otolaryngology at Case Western Reserve University, which position he holds to this day. He continues to practice at both MetroHealth Medical Center of Cleveland and the VA hospital, remaining active in the Residency program at those institutions. He has authored over 170 Journal articles, 45 book chapters, and 3 textbooks. It continues to be a privilege to be involved in the education of more than 150 residents and fellows that has kept him engaged in Otolaryngology for the last 49 years.

DISTINGUISHED SERVICE AWARD

William Lydiatt, MD

With over 20 years in practice of head and neck surgery, Bill Lydiatt is Chair, Department of Surgery at Nebraska Methodist Hospital, Clinical Professor of Surgery at Creighton University in Omaha, Nebraska, and Clinical Professor of Otolaryngology at the United States Naval Hospital, Portsmouth, Virginia. He is also a lecturer at the UNMC College of Medicine and Dentistry and teaches an undergraduate and graduate course in the Department of Biology called the Art and Science of Medical Decision Making at the University of Nebraska, Omaha.

He received a BS in Biology from Stanford University, MD and residency in Otolaryngology at the University of Nebraska, fellowship in head and neck surgical oncology at Memorial Sloan Kettering Cancer Center and a EMBA from the University of Colorado.

Lydiatt's clinical interest is in the care of patients with endocrine surgical disorders of the head and neck, oral cavity cancer and salivary gland neoplasms. He has a long standing interest in the prevention of depression in HNC patients and considers it his career goal to enhance survivorship through the psychological care of head and neck patients. He is interested in the use of the arts to enhance teaching and understanding of the patient experience. He is the current Vice-Chair of 8th Edition AJCC Head and Neck Staging Committee and is dedicated to enhancing the staging of head and neck cancer to better reflect the patient's reality. He has over 130 publications, books and book chapters in the field. He is a proud member of the American Head and Neck Society and has been since its inception. He is happily married to Kathy and has two sons, one daughter and one daughter in law.

Past Distinguished Service Award Recipients

Jatin P. Shah, MD 1989
Stephan Ariyan, MD 1990
Ashok R. Shaha, MD 1991
Elliot W. Strong, MD 1995
John J. Coleman, III MD 1999
David L. Larson, MD 1999
Harold J. Wanebo, MD 1999
Jonas T. Johnson, MD 2001
Helmuth Goepfert, MD 2003
Marc D. Coltrera, MD 2004
Wayne Koch, MD 2005
John A. Ridge, MD, PhD 2006
Ernest A. Weymuller, Jr., MD 2007
Helmuth Goepfert, MD 2008
Keith S. Heller, MD 2009
Mark K. Wax, MD 2010
Randal S. Weber 2011
Ashok R. Shaha, MD 2012
Dennis H. Kraus, MD 2013
Jesus E. Medina, MD 2014
Carol R. Bradford, MD 2015
Ehab Hanna, MD 2016
Dennis H. Kraus, MD 2017
Brian P. Burkey, MD, MEd 2018

Past Special Recognition Award Recipients

Paul B. Chretien, MD 1984
John M. Lore, Jr., MD 1985
William S. MacComb, MD 1986
Calvin T. Klopp, MD 1987
Edgar L. Fazell, MD 1988
Harvey W. Baker, MD 1989
Vahram Y. Bakamjian, MD 1991
Jean-Louis Lefevbre, MD 1995

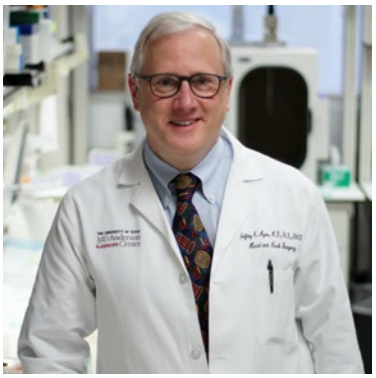
PRESIDENTIAL CITATIONS

Eugene N. Myers, MD, FACS, FRCS Edin. (Hon)

Served as Chairman of the Department of Otolaryngology at the University of Pittsburgh School of Medicine for 33 years. He is now a Distinguished Professor and Chairman Emeritus. A graduate of Temple University School of Medicine he completed a Residency in Otolaryngology at the Massachusetts Eye and Ear Infirmary/Harvard Medical School, as well as a fellowship in Head and Neck Surgery with Dr. John Conley. Dr. Myers also served as an Otolaryngologist in the U.S. Army 97th General Hospital in Frankfurt, Germany.

Head and Neck Surgery was Dr. Myers' clinical interest and he estimates that he did 9,000 operations during his active surgical career. His rich clinical experience led to more than three hundred publications in peer reviewed journals and dozens of book chapters. He is the Editor of Operative Otolaryngology- Head and Neck Surgery, Decision Making in Otolaryngology, Cancer of the Head and Neck, and is the Series Editor of Master Techniques in Otolaryngology.

Dr. Myers served as President of the American Board of Otolaryngology, American Academy of Otolaryngology- Head and Neck Surgery, American Society of Head and Neck Surgery, the American Laryngological Association and the Pan-American Society of Otolaryngology- Head and Neck Surgery. Dr. Myers is currently the Honorary President of the Balkan Society of Otolaryngology and is the AAO-HNS Regional Advisor to the Balkan Countries and remains a member of the AAO-HNS International Committees.



Jeffrey Myers, MD, PhD, FACS

Dr. Myers is Professor and Chair of the Department of Head and Neck Surgery at The University of Texas MD Anderson Cancer Center and holds the Alando J. Ballantyne Distinguished Chair of Head and Neck Surgery. He is a co-leader of the HPV-Related Cancers Moon Shot™, an institutional effort to accelerate research and rapidly translate findings into improved therapies for cancers caused by the human papillomavirus. He holds a joint appointment as a Professor of Cancer Biology at MD Anderson and Adjunct Professor of Otolaryngology-Head and Neck Surgery at Baylor College of Medicine. Dr. Myers is also the Director of Translational Research for the Division of Surgery at MD Anderson. A board-certified Otolaryngologist-Head and Neck Surgeon, Dr. Myers has been at the forefront of the comprehensive genomic characterization of oral cancers. He has made seminal contributions to understanding the role of TP53 mutations in growth and spread of oral squamous cell cancers and is translating those into improved treatments for patients. His team co-developed an algorithm called the Evolutionary Action for TP53, EAp53, that stratifies risk levels for patient with tumor that express TP53 mutations. Dr. Myers showed that some forms of TP53 mutations can make head and neck tumors more aggressive and patients harboring these mutations can develop treatment resistance and have worse outcomes. His team is working to confirm that TP53 can be used as a biomarker to predict response to cisplatin-based therapy and identify the patients most likely to benefit from that treatment. His team also is exploring interactions between genomic alterations and TP53 mutations and how they relate to the development, progression and response of head and neck cancers to immunotherapy.

Dr. Myers earned his Medical and Doctoral Degrees in from The Perelman School of Medicine at the University of Pennsylvania in Philadelphia. He completed a surgical internship and residency in Otolaryngology-Head and Neck Surgery at the University of Pittsburgh School of Medicine and a Fellowship in Head and Neck Surgical Oncology at MD Anderson, after which he joined the faculty in 1997. Dr. Myers' work has led to 240 papers in peer-reviewed journals. He has written or edited six books about head and neck cancers.

Among his many honors are MD Anderson's Julie and Ben Rogers Award for Excellence in Patient Care, the Head and Neck Surgery Honor Award from the American Academy of Otolaryngology and a faculty teaching award from MD Anderson. He is a past-president of the American Head and Neck Society and was named a fellow of the American Association for the Advancement of Science in 2017.

PRESIDENTIAL CITATIONS

James Suen, MD

Dr. Suen had his medical training at the University of Arkansas for Medical Sciences (UAMS), his Internship at the San Francisco General Hospital, and his Residency at UAMS. He was then accepted as the first Otolaryngologist in the Head and Neck Surgery Fellowship at the M.D. Anderson Cancer Center. After 7 months he was advanced to the Faculty. When the Chair of the Dept. of Otolaryngology at Arkansas became vacant, Dr. Suen was recruited to become the chair. He was the Chairman for 43 years.

His accomplishments include: Co-Editor of 4 major Textbooks with Dr. Eugene Myers on Cancer of the Head and Neck. He also has co-edited a text, Emergencies in Otolaryngology, and 2 Textbooks on Vascular Anomalies of the Head and Neck, and recently co-edited a textbook on the Diagnosis and Management of Head and Face Pain. Dr. Suen has published over 150 Journal articles and book chapters. He has been listed in every edition of the Best Doctors in America, America's Top Doctors for Cancer, and Top Surgeons in the U.S. Dr. Suen was the personal physician for President William Clinton during his Presidency.

Dr. Suen has been on the Board of Directors of the American Academy of Otolaryngology and of the American Head and Neck Society and was a past president of the AHNS in 1993. He has received the Distinguished Faculty Award from the University of Arkansas for Medical Sciences and from the M.D. Anderson Cancer Center. In 1996 an Endowed Chair was named for him and in 2000 he was named the Gerald F. Hamra Distinguished Professor in Otolaryngology. He also holds the Patricia and J. Floyd Kyser M.D. Chair in Otolaryngology. In 2007 he was awarded the status of Distinguished Professor at UAMS.

His primary medical interests have been in the treatment of head and neck cancer, and the management of extensive Vascular Malformations of the head and neck, and also the management of head and face pain. He helped to popularize the modified neck dissection surgery. He is still working full time with a focus now on patients from all over the world with complicated Vascular Anomalies and on patients with severe face and head pain.

Randal Weber, MD

Randal S. Weber, M.D., F.A.C.S., is an internationally recognized surgeon and expert in the treatment of patients with head and neck cancer. He is the immediate past chairman of the Department of Head and Neck Surgery, a position he held for over 14 years. He has a joint appointment as Professor, Department of Radiation Oncology, at The University of Texas MD Anderson Cancer Center in Houston, Texas, and is Adjunct Professor, Department of Otolaryngology-Head and Neck Surgery, at Baylor College of Medicine in Houston. He is the recipient of the John Brooks Williams and Elizabeth Williams Distinguished University Chair in Cancer Medicine. A leader in healthcare initiatives to improve cancer care, Dr. Weber has been instrumental in the efforts to improve the quality of care and the outcomes achieved through the establishment of performance-driven processes and the adherence to evidence-based treatment guidelines for patients with head and neck cancer. His leadership efforts in promoting quality cancer care that is value driven have been instrumental in creating a national agenda to improve head and neck cancer care. In addition to maintaining a busy clinical schedule, he remains closely involved in the professional development and education of head and neck surgical oncology fellows. He remains active in clinical research investigating new treatment approaches for patients with head and neck cancers and is a pioneer in the use of organ-sparing oncologic strategies. Highly sought after for his expertise and professional insights, Dr. Weber has been the guest lecturer and visiting professor on more than 200 occasions both in the United States and around the world, in addition to leading numerous courses and seminars. Dr. Weber was honored as the Hayes Martin Lecturer and recipient of the Distinguished Service Award at the April 2011 meeting of the American Head and Neck Society. He has served as President of the Society of University Otolaryngologists–Head and Neck Surgeons, the American Radium Society, and the American Head and Neck Society. He is the past President of the American Board of Otolaryngology and past Chair of the Head and Neck Surgery Committee of the Radiation Therapy Oncology Group. Dr. Weber is a prolific author with over 400 publications that include scientific articles, book chapters, and textbooks. He is the immediate past Editor in Chief of Head & Neck: Journal for the Sciences and Specialties of the Head and Neck, a position he held for 13 years. He also serves on the editorial board of several scientific journals. On September 1, 2016, Dr. Weber assumed the role of Chief Patient Experience Officer for MD Anderson Cancer Center and will continue an active head and neck surgical practice.

MARGARET F. BUTLER OUTSTANDING MENTOR OF WOMEN IN HEAD AND NECK SURGERY AWARD

Dr. Margaret Butler was the first female Otolaryngology chair in the United States. In 1906, she was appointed Chair of Ear, Nose and Throat at Women's Medical College of Pennsylvania. As a respected otolaryngologist and an ambassador of the specialty, Dr. Butler provided a blueprint for future generations of female otolaryngologists.

The purpose of the Margaret F. Butler, MD Champion of Women in Head and Neck Surgery Award is to recognize individuals who have demonstrated leadership in promoting gender diversity in the field of Head and Neck Surgery and its related endeavors Awardees have demonstrated leadership and consistent track record of promoting gender diversity and equity in head and neck surgery, and its related fields; have consistently supported and promoted women in head and neck surgery and its related endeavors, as well as mentoring individuals through merit-based career advancements and promotions; and have measurable impact in the promotion of women in head and neck surgery and its related fields, i.e. career advancement of mentees, mentorship in publications and research.

Awardee:

2019 | Dr. Marion E. Couch

Marion E. Couch, MD, PhD, MBA

Marion Couch is currently the Senior Medical Advisor in the Office of the Administrator at the Centers for Medicare & Medicaid Services (CMS) in Washington, DC. Prior to that, she was the Richard Miyamoto Chair of Otolaryngology – Head & Neck Surgery at Indiana University. During her time there, she was also the Chair of the Indiana University Health Physicians (IUHP) Board and the Physician Executive of Surgical Services for the medical group, IUHP.

She obtained her medical degree at Rush Medical College and received her PhD at Rush University. Her residency training was at Johns Hopkins Hospital where she became an Assistant Professor. She was recruited to the University of North Carolina (UNC) where she was promoted to Associate Professor. During her time at UNC, she completed a MBA with a Health Sector Management certificate at Duke's Fuqua School of Business. Dr. Couch has also served as the Interim Chair of Surgery at the University of Vermont College of Medicine where she was the Vice President of Finance in the medical group as well. She was the founding President of the Cancer Cachexia Society and has been the President of the Society of University Otolaryngologists. She is the author of 95 publications and chapters.

Marion is married to Ed Couch and their twins, Katie and Will, are in college. They enjoy skiing, traveling, and supporting the local rowing center.

AFRICAN HEAD AND NECK SOCIETY SCHOLARSHIP

The African Head and Neck Society scholarship has been supported by generous donations to the AHNS through the Global Outreach Service. The purpose of this Award is to recognize individuals who inspire and educate head and neck surgeons in Sub-Saharan Africa.

The $2000 award fosters collaboration between the African Head and Neck Society and the AHNS to allow the recipient to travel to and participate in the annual AHNS meeting as well as visit a US Head & Neck Surgery program.

Anna Konney MD, FWACS, FGCS, Clinical Fellow in Head and Neck Surgery (UCT, SA)

Dr Anna Konney is the Head of ENT Department , Consultant ENT , Head and Neck Surgeon of the Komfo Anokye Teaching Hospital (KATH), Kumasi, Ghana, West Africa.

She completed formal education with Distinction (Gold Medal) in 1989 and her medical education and training at the Almaty State Medical Institute, Republic of Kazakhstan in 1995. She then proceeded to Ghana, where she completed internship at KATH, residency in fellowship programme in the West African College of Surgeons, graduating as a co-best Fellow in ORL in 2006.

Karl Storz awarded a Post Fellowship training to Dr Konney in Advanced Head and Neck Surgery at the Groote Schuur hospital in Cape Town, South Africa in 2007. She successfully completed this program in 2008 as a Fellow in Head and Neck Surgery. She is also a Fellow of the Ghana College of Physicians and Surgeons.

In 2008, Dr Konney successfully led the team to perform the first total laryngectomy with neck dissection in Ghana. This achievement gained national and international recognition, and it was a pleasant surprise that she was invited to be the Guest of Honor (which was gladly and duly honored) at the AHNS 2009 Annual Meeting held in Phoenix, Arizona.

She is a lecturer at the School of Medicine and Dentistry, Kwame Nkrumah University of Science and Technology (KNUST), Kumasi, Ghana. She continues to mentor students, residents and fellows and she is not giving up on creating the best conditions and atmosphere to increase interest, commitment and dedication to teaching, service and research in ORL/ Head and neck oncology. She has presented several papers and lectures in her field of work at both local and international conferences.

Dr Konney is currently the President-elect of the African Head and Neck Society(AfHNS), Chairman of the Oto-rhinolaryngology Society of Ghana(OSoG), ORL Faculty Board Member and an Examiner of the ORL Faculty of the Ghana College of Physicians and Surgeons. She also serves as the International Corresponding Society Member of the American Academy of Otolaryngology-Head and Neck Surgery (AAO-HNS), plays an active role in the KATH/University of Michigan Collaboration in ORL/Head and neck Surgery program, and quite recently, she is a member of the International Collaboration on Improving Cancer outcomes in low- and middle-income countries (ICOnIC)

Dr Konney is married for 25 years to Tom -a consultant gynecologic oncologist at KATH. The family is blessed with 3 children: Maria- newly graduated MD, Dennis-pursuing a degree course in Architecture at KNUST, and Alexander-an aspiring MD.

CONGRATULATIONS TO THE AHNS 2019 MANUSCRIPT AWARD WINNERS!

Presented during the AHNS Awards Ceremony on May 1, 2019 at 4:50pm in Grand 5.

Robert Maxwell Byers Award: Marco A. Mascarella,MD, McGill University – *Preoperative Risk Index for Patients Undergoing Head and Neck Cancer Surgery*

Best Prevention and Early Detection Paper: Alia Mowery, MS3 & Daniel Clayburgh, MD, Phd, Oregon Health and Science University – *Elevated Risk of Head and Neck Cancer in Patients with History of Hematologic Malignancy*

Best Prevention and Early Detection Paper: Nicole Craker, MD, MPH, University of Kentucky Medical Center - *Chronic Opioid Use After Treatment of Laryngeal Cancer*

Randal Weber, MD Quality, Safety, Value in HN Oncology Award: Shaum Sridharan, MD, University of Pittsburgh Medical Center (UPMC) – *Early Oral Tongue Squamous Cell Carcinoma with Histologically Benign Lymph Nodes: A Model Predicting Local Control and Vetting of the 8th edition of AJCC pT Stage*

Best Resident Clinical Paper: Andrew Larson, MD, UCSF Otolaryngology-Head and Neck Surgery – *Beyond Depth of Invasion: Adverse Pathologic Tumor Features in Early Oral Tongue Squamous Cell Carcinoma*

Best Resident Basic Science Paper: Cory Fulcher, MD, Thomas J. Ow, MD, MS, Montefiore Medical Center/Albert Einstein College of Medicine – *The CDK4/6 inhibitor palbociclib demonstrates efficacy alone and in combination with radiation in HPV-negative head and neck squamous cell carcinoma*

PAST PRESIDENTS

The American Head and Neck Society:

Jonathan Irish, MD, MSc, FRCSC (2018)
Jeffrey N. Myers, MD, PhD (2017)
Dennis Kraus, MD (2016)
Douglas A. Girod (2015)
Terry A. Day, MD (2014)
Mark K. Wax, MD (2013)
Carol R. Bradford, MD (2012)
David W. Eisele, MD (2011)
John A. Ridge, MD (2010)
Wayne M. Koch, MD (2009)
Gregory T. Wolf, MD (2008)
Randal S. Weber, MD (2007)
John J. Coleman, III, MD (2006)
Patrick J. Gullane, MD (2005)
Jonas T. Johnson, MD (2004)
Paul A. Levine, MD (2003)
Keith S. Heller, MD (2002)
Ernest A. Weymuller, Jr., MD (2001)
Jesus E. Medina, MD (2000)
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The American Society for Head and Neck Surgery:

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Nicholas J. Cassisi, MD (1996-97)
Charles W. Cummings, MD (1995-96)
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James Y. Suen, MD (1993-94)
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Willard N. Fee, Jr., MD (1989-90)
Eugene N. Myers, MD (1988-89)
Charles J. Krause, MD (1987-88)
John M. Lore, Jr., MD* (1986-87)
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Hugh F. Biller, MD (1984-85)
Paul H. Ward, MD (1983-84)
Jerome C. Goldstein, MD (1982-83)
Douglas B. Bryce, MD* (1981-82)
J. Ryan Chandler, MD* (1980-81)
Loring W. Pratt, MD (1979-80)
William M. Trible, MD* (1978-79)
John A. Kirchner, MD (1977-78)
George F. Reed, MD* (1976-77)
Emanuel M. Skolnick, MD* (1975-76)
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Paul H. Holinger, MD* (1961-63)
John J. Conley, MD* (1959-61)

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John R. Saunders, Jr., MD (1997)
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J. Edward M. Young, MD (1994)
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Oscar Guillamondegui, MD (1992)
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Alando J. Ballantyne, MD* (1985)
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Charles C. Harrold, MD* (1972)
Harvey W. Baker, MD* (1971)
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Arthur G. James, MD* (1968)
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Edgar L. Frazell, MD* (1966)
Harry W. Southwick, MD* (1965)
Calvin T. Kloop, MD* (1964)
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Arnold J. Kremen, MD (1960-61)
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Hayes Martin, MD* (1954-1957)

**Deceased*

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CME WORKSHEET

This is not your CME credit form. Please use the worksheet below to track the number of CME hours you attend for each activity. Fill in the number of hours you attended each activity in the chart below to track your CME credits.

Wednesday, May 1, 2019			
Time	Activity	Credits Available	Hours Attended
7:20 am – 8:05 am	Jatin Shah Symposium: Remote Access versus Standard Thyroidectomy: Where is the Value and Who Defines It?	0.75	
	Reconstructive Roundtable: Pearls and Pitfalls of Pharyngeal Reconstruction after Salvage Laryngectomy		
8:10 am – 8:55 am	Advances in Radiotherapy: Proton v. IMRT Debate	0.75	
	What is Quality in Head and Neck Surgery?		
9:00 am – 9:45 am	Cooperative Groups Updates: Where We Have Been and Where We are Going?	0.75	
	Larynx Cancer Debate: Incorporating Best Evidence		
10:15 am – 11:00 am	Complexities in the Care of Non-melanoma Skin Cancer	0.75	
	Salivary Debates: How Much is Too Much?		
11:05 am – 12:00 pm	John Conley Lecture: Value-Based Health Care: The Agenda for Head and Neck - Michael Porter, PhD	1.0	
1:00 pm - 1:10 pm	Best of Mucosal HPV-Positive Abstracts	0.25	
	Best of Endocrine Abstracts		
1:10 pm – 1:55 pm	Debate: Re-Defining the Role of Chemotherapy for HPV-Positive Oropharynx Cancer	0.75	
	Scientific Session 1: Endocrine		
2:00 pm – 2:45 pm	Defining the Value of Salvage Surgery, Palliative Care and Primary Treatment in Head and Neck Cancer	0.75	
	Scientific Session 2: HPV-Negative I		
3:15 pm – 4:00 pm	Skull Base Tumor Board	0.75	
	Scientific Session 3: Reconstructive Advances I		
4:05 pm – 4:50 pm	Best of 2019: Practice-Changing Clinical Trials	0.75	
4:05 pm – 5:00 pm	Scientific Session 4: HPV-Positive		
	Total Credits Available for Wednesday, May 1, 2019:	7.25	
Thursday, May 2, 2019			
6:00 am – 7:00 am	Scientific Session 5: Value I	1.0	
7:00 am – 7:55 am	Scientific Session 6: HPV-Negative II	1.0	
7:00 am – 7:10 am	Best Abstracts in Cutaneous Malignancy	1.0	
7:10 am – 7:55 am	Melanoma Debates: Is Head and Neck Melanoma Different?		
8:00 am – 8:45 am	Endocrine Tumor Board: Management of Advanced Thyroid Malignancy – The Evolving Role of Targeted Therapy and Surgery	0.75	
	Scientific Session 7: Reconstructive Advances II		
8:50 am – 9:45 am	Best of 2019: Pivotal International Trials	1.0	
8:50 am – 9:00 am	Best of Skull Base Abstracts	1.0	
9:00 am – 9:45 am	Skull Base Cancer Debates: Should I Operate?		
10:15 am – 11:00 am	Novel Approaches to an Old Problem: Re-Thinking Oral Cavity Cancer	0.75	
	Scientific Session 8: Outcomes		
11:00 am – 12:00 pm	Presidential Address and Awards	1.0	
1:00 pm – 1:45 pm	Current Concepts in Education	0.75	
1:00 pm – 1:45 pm	Scientific Session 9 – Advances in Systemic Therapy		
1:00 pm – 1:10 pm	Best of Reconstructive Abstracts	0.75	
1:10 pm – 1:55 pm	Debates in the Reconstruction of Head and Neck Cancer Defects		
1:55 pm – 2:45 pm	Hayes Martin Lecture: Life Lessons from my Thirty-Seven Years as a Navy SEAL - Wiliam McRaven	0.75	
3:15 pm – 4:00 pm	Immunotherapy 101 for Head and Neck Cancer	0.75	
3:15 pm – 4:00 pm	Scientific Session 10: Value II		
3:15 pm – 3:25 pm	Best of Salivary Abstracts	0.75	
3:25 pm – 4:10 pm	Moving Beyond Histology: Biomarkers for Salivary Gland Cancer		
4:05 pm – 5:00 pm	Scientific Session 11: Biomarkers	0.75	
4:15 pm – 5:00 pm	Controversies in Endocrine Surgery: Are We Operating Too Much?		
4:05 pm – 4:15 pm	Best of Mucosal HPV-Negative Abstracts	0.75	
4:15 pm – 5:00 pm	Debate: Optimal 1st Line Management for HPV Oropharynx Cancer – Surgery v. Radiation		
5:30 pm – 6:00 pm	Quickshot Presentations	0.5	
6:00 pm – 7:00 pm	Combined Poster Reception	1.0	
	Total Credits Available for Thursday, May 2, 2019:	10.25	
	TOTAL CREDITS AVAILABLE:	17.5	

AHNS ACCREDITATION

To receive your CME credit:

AHNS has instituted a process for claiming CME credits and printing certificates. All attendees wishing to receive a CME certificate for activities attended at the AHNS 2019 Annual Meeting must first complete an on-line meeting evaluation form. An email will be sent to attendees with a link to the on-line survey and claim form. For any questions, please contact christines@ahns.info.

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The American Head & Neck Society (AHNS) is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide Continuing Medical Education for physicians.

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The AHNS designates this live activity for a maximum of **17.5 *AMA PRA Category 1 Credit(s)*™**. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Successful completion of this CME activity, which includes participation in the evaluation component, enables the participant to meet the expectations of the American Board of Otolaryngology's Maintenance of Certification (MOC) program. It is the CME activity provider's responsibility to submit participant completion information to ACCME for the purpose of recognizing participation.

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You are encouraged to …

1. Document (on this form) any concerns about commercially-biased presentations/materials during educational sessions,
2. Make suggestions about how bias might have been avoided/minimized, and
3. Immediately take your completed form to the AHNS staff at the Registration Desk

Your feedback will be shared with a member of the CME Compliance Committee, who will make the faculty aware of the concerns and/or suggestions.

Commercial Bias

The AHNS CME Compliance Committee has defined "bias" as *an existing predisposition that may interfere with objectivity in judgment. Bias may be minimized through prior declaration of any source of conflict of interest, reference to evidence-based literature and expert opinions, and/or an independent peer-review process.*

If an educational presentation certified for CME includes bias of any commercial interests*, please provide the following details:

*(*Commercial interest is defined by the ACCME as an entity producing, marketing, re-selling, or distributing health care goods or services consumed by, or used on, patients.)*

Presentation:
(eg session name, etc)

Commercial Bias by:
(ie faculty name, company rep)

Promotion via:
(eg handouts, slides, what they said, actions)

Commercial Bias about:
(check all that apply)

- ❑ Patient treatment/management recommendations were not based on strongest levels of evidence available.
- ❑ Emphasis was placed on one drug or device versus competing therapies, and no evidence was provided to support its increased safety and/or efficacy.
- ❑ Trade/brand names were used.
- ❑ Trade names versus generics were used for all therapies discussed.
- ❑ The activity was funded by industry and I perceived a bias toward the grantors.
- ❑ The faculty member had a disclosure and I perceived a bias toward the companies with which he/she has relationships.
- ❑ Other (please describe):_____

Suggestions for avoiding or minimizing bias:

Extra Copies Are Available at the AHNS Desk

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SCHEDULE-AT-A-GLANCE

		Grand 5 (Level 4) General Session	Grand 6 (Level 4) Concurrent Session	Room 301/302 (Level 3) Concurrent Session	Other Rooms
Wednesday, May 1, 2019	6:00 AM - 7:00 AM	**AHNS Skin Cancer and Melanoma Section Meeting**	**AHNS Skull Base Section Meeting**		
	7:00 AM - 7:15 AM	**Welcome & Opening Comments**			
	7:20 AM - 8:05 AM	**Jatin Shah Symposium: Remote Access versus Standard Thyroidectomy: Where is the Value and Who Defines It?**	**Reconstructive Roundtable: Pearls and Pitfalls of Pharyngeal Reconstruction after Salvage Laryngectomy**		
	8:10 AM - 8:55 AM	**Advances in Radiotherapy: Proton v. IMRT Debate**	**What is Quality in Head and Neck Surgery?**		
	9:00 AM - 9:45 AM	**Cooperative Groups Updates: Where We Have Been and Where We are Going?**	**Larynx Cancer Debate: Incorporating Best Evidence**		
	9:45 AM - 10:15 AM	Break with Exhibitors in Grand Foyer			
	10:15 AM - 11:00 AM	**Complexities of Non-Melanoma Skin Cancer**	**Salivary Debate: How Much is Too Much?**		
	11:05 AM - 12:00 PM	**John Conley Lecture: Value-Based Health Care: The Agenda for Head and Neck - Michael Porter, PhD**			
	12:00 PM - 1:00 PM	Lunch with Exhibitors in Grand Foyer			
	1:00 PM - 1:55 PM	1:00 pm - 1:10 pm **Best of Mucosal HPV-Positive Abstracts**		1:00 pm - 1:10 pm **Best Of Endocrine Abstracts**	
		1:10 pm - 1:55 pm **Debate: Re-Defining the Role of Chemotherapy for HPV-Positive Oropharynx Cancer**		1:10 pm - 1:55 pm **Scientific Session 1: Endocrine**	
	2:00 PM - 2:45 PM	**Defining the Value of Salvage Surgery, Palliative Care and Primary Treatment in Head and Neck Cancer**		**Scientific Session 2 - HPV-Negative I**	
	2:45 PM - 3:15 PM	Break with Exhibitors in Grand Foyer			
	3:15 PM - 4:00 PM	**Skull Base Tumor Board**		**Scientific Session 3: Reconstructive Advances I**	
	4:05 PM - 5:00 PM	4:05 pm - 4:50 pm **Best of 2019: Practice-Changing Clinical Trials**		**Scientific Session 4: HPV-Positive**	
		4:50 pm - 5:00 pm **AHNS Research Awards**			
	5:00 PM - 6:00 PM	**AHNS Business Meeting (Members Only)**			
	6:00 PM - 7:00 PM	**AHNS Reconstructive Section Meeting**		**AHNS Endocrine Section Meeting**	**AHNS Fellowship Information Session** *(Room 502/503)*

SCHEDULE-AT-A-GLANCE

		Grand 5 (Level 4) General Session	Grand 6 (Level 4) Concurrent Session	Room 301/302 (Level 3) Concurrent Session	Other
Thursday, May 2, 2019	6:00 AM - 7:00 AM	**AHNS Salivary Section Meeting**		**Scientific Session 5: Value I**	
	7:00 AM - 7:55 AM	7:00 am - 7:10 am **Best Abstracts in Cutaneous Mailgnancy** 7:10 am - 7:55 am **Melanoma Debates: Is Head and Neck Melanoma Different?**		**Scientific Session 6: HPV-Negative II**	
	8:00 AM - 8:45 AM	**Endocrine Tumor Board: Management of Advanced Thyroid Malignancy - The Evolving Role of Targeted Therapy and Surgery**		**Scientific Session 7: Reconstructive Advances II**	
	8:50 AM - 9:45 AM	**Best of 2019: Pivotal International Trials**		8:50 am - 9:00 am **Best of Skull Base Abstacts** 9:00 am - 9:45 am **Skull Base Cancer Debates: Should I Operate?**	
	9:45 AM - 10:15 AM	Break with Exhibitors in Lone Star Ballroom (Level 3)			
	10:15 AM - 11:00 AM	**Novel Approaches to an Old Problem: Re-thinking Oral Cavity Cancer**		**Scientific Session 8: Outcomes**	
	11:00 AM - 12:00 AM	**AHNS Presidential Address and Awards**			
	12:00 PM - 1:00 PM	Lunch with Exhibitors in in Lone Star Ballroom (Level 3)			
	1:00 PM - 1:50 PM	**Current Concepts in Education**	1:00 pm - 1:10 pm **Best of Reconstructive Abstracts** 1:10 pm - 1:55 pm **Debate: Reconstruction of Head and Neck Cancer Defects**	**Scientific Session 9: Advances in Systemic Therapy**	
	1:55 PM - 2:45 PM	**Hayes Martin Lecture: Life Lessons from my Thirty-Seven Years as a Navy SEAL - Wiliam McRaven**			
	2:45 PM - 3:15 PM	Break with Exhibitors in in Lone Star Ballroom (Level 3)			
	3:15 PM - 4:00 PM*	**Immunotherapy 101 for Head and Neck Cancer**	3:15 pm - 3:25 pm **Best of Salivary Abstracts** 3:25 pm - 4:10 pm **Moving Beyond Histology: Biomarkers for Salivary Gland Cancer**	**Scientific Session 10: Value II**	
	4:05 PM - 5:00 PM*	4:05 pm - 4:15 pm **Best of Muscosal HPV-Negative Abstracts** 4:15 pm - 5:00 pm **Debate: Optimal 1st Line Management for HPV-Related Oropharynx Cancer**	**Debate: Controversies in Endocrine Surgery: Are We Operating Too Much?**	**Scientific Session 11: Biomarkers**	
	5:00 PM - 5:50 PM				
	5:30 PM - 6:00 PM				**AHNS Quickshot Presentations** Griffin Hall (Level 2)
	6:00 PM - 7:00 PM				**Combined Poster Reception** Griffin Hall (Level 2)
	7:00 PM - 7:30 PM				
	7:30 PM - 8:00 PM				**AHNS President's Reception** Grand 2 (Level 4)

*Times differ across rooms.

SCIENTIFIC PROGRAM

WEDNESDAY, MAY 1, 2019

Live audience response polling will be utilized in many sessions. Please following the instructions listed on the polling slides. You may respond via text message or the polleverywhere website listed on the polling slide.

7:00 am – 7:15 am **Grand 5**

Welcome and Opening Comments

Ehab Y. Hanna, MD, AHNS President
Neil D. Gross, MD, Program Co-Chair
Carole Fakhry, MD, MPH, Program Co-Chair

7:20 am – 8:05 am **Grand 5**

Jatin Shah Symposium: Remote Access versus Standard Thyroidectomy: Where is the Value and Who Defines It?

Moderator: Amy Chen, MD, MPH

Open Thyroidectomy v. Robotic Assisted Thyroidectomy vs. Transoral Vestibular Endoscopic Thyroidectomy:

Michael Singer, MD v. Yoon Woo Koh, MD v. Jonathon Russell, MD

Rebuttals, Questions and Answer

This session will be a debate to highlight the pros and cons of two remote access approaches versus a traditional "open" transcervical approach for thyroidectomy.

At the conclusion of this session, participants will be able to:

- Distinguish between transoral endoscopic thyroidectomy, robotic assisted thyroidectomy, and traditional thyroidectomy approaches.
- Identify the indications and contraindications to each approach.
- Recognize the value of each approach to the patient, payor and surgeon.

7:20 am – 8:05 am **Grand 6**

Reconstructive Roundtable: Pearls and Pitfalls of Pharyngeal Reconstruction after Salvage Laryngectomy

Moderator: Jeremy Richmon, MD
Panelists: Steven Cannady, MD; Steven Chinn, MD, MPH; Kerstin Stenson, MD; Peirong Yu, MD

This session will be an interactive case-based format to discuss reconstruction after salvage laryngectomy and perioperative management. The role of reconstruction and pre-operative planning will be discussed. Panelists will provide input, pearls and pitfalls regarding intra- and post-operative decision-making options for challenging cases. Evidence, controversies and outcomes will be presented.

At the conclusion of this session, participants will be able to:

- Recognize when free flap reconstruction is necessary for salvage laryngectomy.
- Identify risk factors and implement perioperative strategies to minimize post-operative complications.
- Discuss management of complex salvage reconstruction and complex post-operative complications associated with salvage laryngectomy.

8:10 am – 8:55 am **Grand 5**

Advances in Radiotherapy: Proton v. IMRT Debate

Moderator: Vasu Divi, MD

Primer on Radiobiology - *Beth Beadle, MD, PhD*

Proton Therapy 101 - *Brandon Gunn, MD*

Debate: IMRT v. IMPT (proton therapy) - *Sue Yom, MD, PhD v. Steven Frank, MD*

Rebuttals, Questions and Answers

This session will provide background on IMRT and proton therapy followed by a debate which will examine the indications, clinical benefits, side-effect profiles, and cost of these modalities. The audience will be challenged to assess the value of these treatment options and how they should be incorporated into current treatment algorithms.

At the conclusion of this session, participants will be able to:

- Describe the benefits of proton therapy and IMRT, and discuss how these differ.
- Compare the total cost of each treatment modality.
- Appraise the value of each therapy considering clinical benefits, side-effect profiles, and treatment costs.

8:10 am – 8:55 am **Grand 6**

What is Quality in Head and Neck Surgery?

Moderator: David Goldstein, MD, MSc, FRCSC

Patient Perspective: What is Quality of Care? - *Andrew Shuman, MD*

Head and Neck Specific Metrics and How to Implement Quality Initiatives - *Randal Weber, MD*

Does Volume of Surgery Impact Quality? - *Christine G. Gourin, MD*

Should Time to Treatment be a Quality Metric? - *Evan M. Graboyes, MD*

This session will review the concept of quality in head and neck oncologic surgery from both physician and patient perspectives as well as highlight specific quality indicators and metrics.

At the conclusion of this session, participants will be able to:

- Demonstrate an understanding of what quality means in head and neck oncology from a physician and patient perspective.
- Assess quality metrics and evaluate how they can be employed or applied in their practice.
- Recognize the importance of surgical volumes and outcomes.

9:00 am – 9:45 am **Grand 5**

Cooperative Groups Updates: Where We Have Been and Where We are Going

Moderator: Robert Ferris, MD, PhD

SCIENTIFIC PROGRAM

History of Role of Surgeons in Cooperative Groups and Trials - *John A. Ridge, MD, PhD*

From Idea to a Trial and Surgeon Credentialing for Cooperative Group Trials - *Chris Holsinger, MD*

Update on Current Cooperative Group Trials - *Steve Chang, MD*

The ongoing role of cooperative groups in defining the standard of care for head and neck cancer patients will be discussed and the important role surgeons play in cooperative group trials.

At the conclusion of this session, participants will be able to:

- ▹ Review the role of cooperative groups in defining the care of head and neck cancer.
- ▹ Review the pathway for moving an idea to a clinical trial in the cooperative group environment,
- ▹ Update on currently open and upcoming cooperative group clinical trials.

9:00 am – 9:45 am **Grand 6**

Larynx Cancer Debate: Incorporating Best Evidence

Moderator: Benjamin Judson, MD

Debate I: Early Larynx Cancer: Surgery v. **Radiotherapy** - *Daniel L. Price, MD v. Jonathan J. Beitler, MD*

Rebuttals, Questions and Answers

Debate II: Late Stage Larynx Cancer: Sequential Therapy v. **Concurrent Therapy** - *David I. Rosenthal, MD v. Gregory T. Wolf, MD*

Rebuttals, Questions and Answers

Experts will debate the contemporary management of larynx cancer cases using the best evidence to select treatment for early and late larynx cancer.

At the conclusion of this session, participants will be able to:

- ▹ Articulate current data and evidence relating to the management of early and late stage larynx cancers.
- ▹ Recognize the trade-offs and value of different approaches to early and late larynx cancers.

9:45 am - 10:15 am

Break with Exhibitors in Grand Ballroom Foyer

10:15 am – 11:00 am **Grand 5**

Complexities of Non-Melanoma Skin Cancer

Moderator: Steven J. Wang, MD

Panelists: Mike Wong, MD; Audrey Erman, MD; Marcus M. Monroe, MD; Sandro Porceddu, MD

A multidisciplinary head and neck cutaneous tumor board format will be used to discuss challenges and controversies in the management of non-melanoma skin cancers.

At the conclusion of this session, participants will be able to:

- ▹ Articulate indications for sentinel lymph node biopsy for cutaneous squamous cell carcinoma of the head and neck.
- ▹ Identify patients with cutaneous malignancies of the head and neck who should be considered for adjuvant radiation therapy.
- ▹ Recommend best practices for the management of locally advanced or recurrent basal cell carcinoma of the head and neck.

10:15 am – 11:00 am **Grand 6**

Salivary Debate: How Much is Too Much?

Moderator: David W. Eisele, MD

Debate I: Approach for Benign Parotid Tumors: Extracapsular v. **Superficial Parotidectomy** - *Richard Smith, MD v. Ellie Maghami, MD*

Rebuttals, Questions and Answers

Debate II: More v. Less Aggressive Surgical Management of Salivary Cancers -*Daniel Deschler, MD v. David Cognetti, MD*

Rebuttals, Questions and Answers

This session will address two controversial topics in salivary disease in debate format and include videos of selected approaches.

At the conclusion of this session, participants will be able to:

- ▹ Discuss the advantages and disadvantages to different technical approaches to benign parotid tumors.
- ▹ Risk-stratify salivary gland malignancies to determine the optimal extent of surgical therapy
- ▹ Evaluate what factors should be considered when creating a surgical plan for salivary gland tumors

11:05 am – 12:00 pm **Grand 5**

John Conley Lecture

Value-Based Health Care: The Agenda for Head and Neck

Introduction by Ehab Hanna, MD

Speaker - Michael Porter, PhD

12:00 pm – 1:00 pm

Lunch with Exhibitors in Grand Ballroom Foyer

1:00 pm -1:10 pm **Grand 5**

Best of Mucosal HPV-Positive Abstracts

Moderator: Cherie-Ann Nathan, MD

AHNS-010: PLASMA CIRCULATING TUMOR HPV DNA FOR THE SURVEILLANCE OF CANCER RECURRENCE IN HPV-ASSOCIATED OROPHARYNGEAL CANCER
Gaorav P Gupta, MD, PhD[1], Sunil Kumar, PhD[1], Colette Shen, MD, PhD[1], Robert Amdur, MD[2], Roi Dagan, MD[2], Jared Weiss, MD[1], Juneko Grilley-Olson, MD[1], Adam Zanation, MD[1], Trevor Hackman, MD[1], Jeff Blumberg, MD[1], Samip Patel, MD[1], Brian Thorp, MD[1], Mark Weissler, MD[1], Sheets Nathan, MD[3], William Mendenhall, MD[2], Bhishamjit S Chera, MD[1]; [1]University of North Carolina at Chapel Hill, [2]University of Florida Hospitals, [3]Rex/UNC Hospitals

AHNS-011: DEVELOPMENT OF A NOVEL COMPOSITE PATHOLOGIC RISK-STRATIFICATION FOR SURGICALLY RESECTED HPV+ OROPHARYNGEAL CANCER
John D Cramer, MD, Yusuf Dundar, MD, Jeffrey Hotaling,

SCIENTIFIC PROGRAM

MD, Naweed Raza, MD, George Yoo, MD, Ho-Sheng Lin, MD; Wayne State University School of Medicine

1:10 pm – 1:55 pm **Grand 5**

Debate: Re-Defining the Role of Chemotherapy for HPV-Positive Oropharynx Cancer

Moderator: Cherie-Ann Nathan, MD

Debate I: The Role of Chemotherapy for Microscopic Extranodal Extension in HPV-related Oropharynx Cancer
Chemotherapy v. **No Chemotherapy** - *Zain Husain BSc, MD v. Barbara Burtness, MD*

Rebuttals, Questions and Answers

Debate II: The Role Surgery for Macroscopic Extranodal Extension in HPV-related Oropharynx Cancer
Upfront Surgery v. **Chemoradiation** - *Bruce Haughey, MBChB v. James Rocco, MD, PhD*

Rebuttals, Questions and Answers

Experts in the field will debate the addition of chemotherapy after primary surgical treatment for HPV-positive oropharynx cancer patients with microscopic extranodal extension and the ideal primary therapy for patients with gross extranodal extension at presentation.

At the conclusion of this session, participants will be able to:

- ▹ Identify when chemotherapy is warranted in HPV-Positive Oropharynx Cancer for both non-surgical and surgical treatment paradigms.
- ▹ Recognize the short and long term toxicities of chemotherapy
- ▹ Understand evaluate the relative cost-benefit analysis and risk benefit ratio of adding chemotherapy for HPV-related OPC

1:00 pm -1:10 pm **301/302**

Best of Endocrine Abstracts

Moderators: Vikas Mehta, MD & Erin Partington Buczek, MD

AHNS-001: LATERAL NECK ULTRASOUND FOR THYROID CANCER: COMPARISON OF QUALITY BETWEEN COMMUNITY AND HIGH-VOLUME TERTIARY CARE PRACTICE
Heera Govindarajan Venguidesvarane, BDS, Bo Chen, MD, Mark Zafereo, MD, Salmaan Ahmed, MD; The University of Texas MD Anderson Cancer Center

AHNS-002: THE ROLE OF POSTOPERATIVE STIMULATED SERUM THYROGLOBULIN MEASUREMENT FOR PREDICTING RECURRENCE IN PATIENTS WITH PAPILLARY THYROID CANCER: AN ANALYSIS INVOLVING 1,319 PATIENTS
Andre Ywata De Carvalho, MD, MBA, Hugo Fontain Kohler, MD, PHD, Renan Bezerra Lira, MD, PHD, Thiago Celestino Chulam, MD, PHD, Luiz Paulo Kowalski, MD, PHD; A.C.Camargo Cancer Center

1:10 pm – 1:55 pm **301/302**

Scientific Session 1 - Endocrine

Moderators: Vikas Mehta, MD & Erin Partington Buczek,MD

AHNS-003: UTILIZING A HIGH-THROUGHPUT APPROACH TO IDENTIFY EFFECTIVE SYSTEMIC AGENTS FOR AGGRESSIVE THYROID CANCER VARIANTS
Abdallah S Mohamed, MD[1], Ying Henderson[1], Yunyun Chen[1], Clifford Stephan[2], Gilbert Cote[1], Maria Cabanillas[1], Mark Zafereo[1], Vlad Sandulache[3], Stephen Y Lai[1]; [1]MD Anderson Cancer Center, [2]Institute of Biosciences and Technology, Texas A&M University, [3]Baylor College of Medicine

AHNS-004: MACHINE-LEARNING FOR THE GENETIC RISK STRATIFICATION OF THYROID NODULES BY ULTRASOUND
Kelly E Daniels, BS[1], Sriharsha Gummadi, MD[2], Ziyin Zhu, MD[3], Jena Patel, BS[4], Brian Swendseid, MD[4], Andrej Lyshchik, MD, PhD[2], Joseph M Curry, MD[4], Elizabeth E Cottrill, MD[4], John R Eisenbrey, PhD[2]; [1]Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia PA, [2]Department of Radiology, Thomas Jefferson University, Philadelphia, PA, [3]Department of Ultrasound, Beijing Friendship Hospital, Capital Medical University, Beijing, China, [4]Department of Otolaryngology, Thomas Jefferson University, Philadelphia PA

AHNS-005: EVALUATING THYROID CANCER INCIDENCE AND MINNESOTAN RESIDENTIAL RADON CONCENTRATION
Curtis Hanba, MD, Margaret Engelhardt, MD, Sobia Khaja, MD, Emiro Caicedo-Granados, MD; The University of Minnesota - Department of Otolaryngology

AHNS-006: REFINING THE IDENTIFICATION OF A PRECISE CUT POINT FOR THE ASSOCIATION BETWEEN ANNUAL SURGEON TOTAL THYROIDECTOMY VOLUME AND COMPLICATIONS
Charles Metzer, MD[1], Michaela Hull, MS[2], John L Adams, PhD[2]; [1]The Permanente Medical Group, [2]Kaiser Permanente, Center for Effectiveness and Safety Research

AHNS-007: THE USE AND IMPACT OF TECHNOLOGY IN THYROIDECTOMIES: A 2016 NSQIP ANALYSIS
Sina J Torabi, BA, Parsa P Salehi, MD, Fouad Chouairi, BS, Yan Lee, MD; Yale School of Medicine, Department of Surgery (Section of Otolaryngology)

AHNS-008: BILATERAL NECK EXPLORATION VERSUS SPECT, SPECT/CT, OR 4DCT IMAGING IN NON-LOCALIZING PRIMARY HYPERPARATHYROIDISM-A COST-EFFECTIVENESS ANALYSIS.
Ethan Frank, MD[1], Shannon Fujimoto, BS[2], Pedro De Andrade, MD[1], Jared Inman, MD[1], Alfred Simental, MD[1]; [1]Department of Otolaryngology-Head & Neck Surgery, Loma Linda University Medical Center, [2]School of Medicine, Loma Linda University

AHNS-009: A PATHOLOGY PROTOCOL INCREASES LYMPH NODE YIELD IN NECK DISSECTION FOR ORAL CAVITY SQUAMOUS CELL CANCER
Andrew J Holcomb, MD, Mollie Perryman, BA, Joseph Penn, BS, Sara Goodwin, BA, Mark Villwock, MS, Andres Bur, MD, Yelizaveta Shnayder, MD, Terance Tsue, MD, Janet Woodroof, MD, Kiran Kakarala, MD; University of Kansas Medical Center

2:00 pm – 2:45 pm **Grand 5**

Defining the Value of Salvage Surgery, Palliative Care and Primary Treatment in Head and Neck Cancer

Moderator: Susan D. McCammon, MD

Panelists: William Lydiatt, MD; Terry Day, MD; Wayne Koch, MD; Elizabeth Kvale, MD, MSPH; Ezra Cohen, MD

SCIENTIFIC PROGRAM

This expert panel discussion will examine issues of value from primary treatment to death, from patient, provider and societal perspectives. Topics will include decisional regret during the survivorship period, supportive care and (re-) defining value after definitive treatment. The panel will also address decision support and value of salvage surgery or second-line treatment. When does curative intent become palliative intent, and when does palliative intent become low value?

At the conclusion of this session, participants will be able to:

- ▹ Evaluate evidence for the value of salvage surgery for advanced recurrent head and neck cancers.
- ▹ Integrate current data on palliative and supportive care into surgical decision making.
- ▹ Recommend goal-concordant treatment options to patients and their caregivers.

2:00 pm – 2:45 pm **301/302**

Scientific Session 2 - HPV-Negative I

Moderators: Karen Pitman, MD & Dan Price, MD

AHNS-012: RATE OF "SKIP METASTASES" TO LEVEL IV IN No ORAL CAVITY SQUAMOUS CELL CARCINOMA: A META-ANALYSIS AND REVIEW OF THE LITERATURE
Anton Warshavsky, MD, Roni Rosen, Dan M Fliss, MD, Gilad Horowitz, MD; Tel-Aviv Sourasky Medical Center, Sackler School of Medicine, Tel-Aviv, Israel

AHNS-013: NEUTROPHIL-TO-LYMPHOCYTE RATIO AS A PROGNOSTIC INDICATOR FOR OVERALL SURVIVAL IN SQUAMOUS CELL CARCINOMA OF THE HEAD AND NECK
Rocco M Ferrandino, MD, MSCR[1], Scott Roof, MD[1], Jonathan Garneau, MD[1], Yarah Haidar, MD[1], Susan Bates, MD[2], Yeun-Hee Anna Park, MD[2], Joshua M Bauml, MD[3], Eric M Genden, MD[1], Brett Miles, DDS, MD[1], Keith Sigel, MD, PhD[4]; [1]Department of Otolaryngology ⍰ Head and Neck Surgery, Mount Sinai Hospital, New York, NY, [2]Department of Medicine, Division of Hematology/Oncology, James J. Peters VA Medical Center, Bronx, NY, [3]Department of Medicine, Division of Hematology/Oncology, Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA, [4]Department of Medicine, Division of General Internal Medicine, Mount Sinai Hospital, New York, New York

AHNS-014: MANAGEMENT OF EARLY GLOTTIC CANCER IN A VETERAN POPULATION: IMPACT OF RISK FACTORS ON DISEASE RECURRENCE AND TREATMENT SELECTION
Tanner Fullmer, MD[1], Heath D Skinner, MD, PhD[2], David J Hernandez, MD[1], Vlad C Sandulache, MD, PhD[1]; [1]Bobby R. Alford Department of Otolaryngology Head and Neck Surgery, Baylor College of Medicine, [2]Department of Radiation Oncology, The University of Pittsburgh

AHNS-015: SYSTEMATIC REVIEW AND META-ANALYSIS OF ELECTIVE NECK DISSECTION FOR CNo SALVAGE LARYNGECTOMY
Chen Lin[1], Sidharth V Puram[1], Mustafa Bulbul[2], Rosh K Sethi[2], James W Rocco[1], Matthew O Old[1], Stephen Y Kang[1]; [1]Department of Otolaryngology-Head and Neck Surgery, The James Cancer Hospital and Solove Research Institute, The Ohio State University Wexner Medical Center, Columbus, OH, [2]Department of Otolaryngology, Massachusetts Eye and Ear Infirmary, Harvard Medical School, Boston, MA

AHNS-016: CUMULATIVE SUPPRESSIVE INDEX AS A PREDICTOR OF RELAPSE FREE SURVIVAL AND OVERALL SURVIVAL IN HPV- ORAL SQUAMOUS CELL CARCINOMAS WITH NEGATIVE RESECTION MARGINS
Lauren N Hum, MD, DMD[1], Daniel Bethmann, MD[2], Zipei Feng, MD, PhD[3], Shu-Ching Chang, PhD[4], Alexander Eckert, MD[5], Claudia Wickenhauser, MD[2], Bernard A Fox, PhD[6], R. Bryan Bell, MD, DDS, FACS[7]; [1]Department of Oral and Maxillofacial Surgery, Oregon Health and Science University, Portland, OR, [2]Institute of Pathology, Martin Luther University Halle-Wittenberg, Halle, Germany, [3]Bobby R. Alford Department of Otolaryngology, Baylor College of Medicine, Baylor, TX, [4]Medical Data Research Center, Providence St. Joseph's Health, Portland, OR, [5]Department of Oral and Maxillofacial Plastic Surgery, Martin Luther University Halle-Wittenberg, Halle, Germany, [6]Robert W. Franz Cancer Research Center, Earle A. Chiles Research Institute, Portland, OR, [7]Providence Oral, Head and Neck Cancer Program and Clinic, Portland, OR

AHNS-017: SURGERY PROVIDES BETTER DISEASE-FREE SURVIVAL FOR EARLY GLOTTIC CANCER PATIENTS
Eunkyu Lee, MD, Nayeon Choi, MD, Eunhye Kim, RN, Young-Ik Son, MD, PhD; Samsung Medical Center, Seoul, Korea

2:45 pm – 3:15 pm

Break with Exhibitors in Grand Ballroom Foyer

3:15 pm – 4:00 pm **Grand 5**

Skull Base Tumor Board

Moderator: Ricardo Carrau, MD

Panelists: Marc Cohen, MD, MPH; Derrick Lin, MD; Jack Phan, MD, PhD; Nabil Saba, MD; and Lawrence E. Ginsberg, MD

This session will present challenging cases for the multidisciplinary panel to discuss diagnostic and therapeutic options, including controversies and potential complications.

At the conclusion of this session, participants will be able to:

- ▹ Understand the complexities of medical decision making for skull base malignancies.
- ▹ Identify skull base cancer cases amenable to a primary surgical approach.
- ▹ Recognize potential complications from the treatment of skull base cancers.

3:15 pm – 4:00 pm **301/302**

Scientific Session 3 - Reconstructive Advances I

Moderators: Kirin Kakarala, MD & Heather Osborn, MD, FRCS

AHNS-018: VALIDATION OF RISK-ADJUSTED PREDICTION MODELS USING THE SPECIALTY-SPECIFIC HEAD AND NECK RECONSTRUCTIVE SURGERY NSQIP
Samantha Tam, MD, MPH, Wenli Dong, MS, Ira L Margin, RN, CPHQ, David M Adelman, MD, PhD, Randal S Weber, MD, Carol M Lewis, MD, MPH; University of Texas MD Anderson Cancer Center

AHNS-019: RECONSTRUCTION TECHNIQUE FOLLOWING TOTAL LARYNGECTOMY AFFECTS SWALLOWING OUTCOMES
Brianna N Harris, MD[1], Steven Hoshal, MD[2], Lisa Evangelista, CScD[2], Maggie Kuhn, MD[2]; [1]University of Pennsylvania, [2]Uni-

SCIENTIFIC PROGRAM

versity of California Davis

AHNS-020: FUNCTIONAL OUTCOMES OF COMPLEX MANDIBULAR RECONSTRUCTION WITH OSTEOCUTANEOUS FIBULA FREE FLAP WITH OR WITHOUT CAD/CAM-ASSISTED, VIRTUAL SURGICAL SIMULATION AND PLANNING: A RETROSPECTIVE ANALYSIS OF 246 CASES
Jamie A Ku, MD[1], Alexander Mericli, MD[2], Jun Liu, PhD[2], Patrick Garvey, MD, FACS[2]; [1]Cleveland Clinic, [2]MD Anderson Cancer Center

AHNS-021: LONG-TERM SWALLOWING OUTCOMES AFTER SALVAGE LARYNGECTOMY, A COMPARISON BETWEEN RECONSTRUCTIVE TECHNIQUES.
Mauricio A Moreno, MD[1], Mark K Wax, MD[2], Steven B Cannady, MD[3], Evan M Graboyes, MD[4], Arnaoud F Bewley, MD[5], Peter T Dziegielewski, MD[6], Sobia F Khaja, MD[7], Rodrigo Bayon, MD[8], Jesse Ryan, MD[9], Samer Al-khudari, MD[10], Mark W El-Deiry, MD[11], Tamer A Ghanem, MD[12], Rusha Patel, MD[13], Andrew Huang, MD[15], Urjeet A Patel, MD[14]; [1]University of Arkansas for Medical Sciences, [2]Oregon Health & Science University, [3]University of Pennsylvania, [4]Medical University of South Carolina, [5]UC Davis, [6]University of Florida, [7]University of Minnesota, [8]University of Iowa, [9]State University of New York System, [10]Rush University Medical Center, [11]Emory Health Care, [12]Henry Ford Health System, [13]West Virginia University, [14]Northwestern University, [15]Baylor College of Medicine

AHNS-022: SPEECH AND SWALLOWING OUTCOMES AFTER LARYNGECTOMY FOR THE DYSFUNCTIONAL LARYNX
Janice L Farlow, MD, PhD[1], Andrew C Birkeland, MD[2], Anna Hardenbergh, CCCSLP[1], Teresa Lyden, CCCSLP[1], J Chad Brenner, PhD[1], Andrew G Shuman, MD[1], Steven B Chinn, MD[1], Chaz L Stucken, MD[1], Kelly M Malloy, MD[1], Jeffrey S Moyer, MD[1], Keith A Casper, MD[1], Mark E Prince, MD[1], Carol R Bradford, MD[1], Gregory T Wolf, MD[1], Douglas B Chepeha, MD[3], Andrew J Rosko, MD[1], Matthew E Spector, MD[1]; [1]University of Michigan, [2]Stanford University, [3]Princess Margaret Cancer Centre

AHNS-023: A PLAN OF THE DAY SIGNIFICANTLY REDUCES OPERATING ROOM TIME FOR HEAD AND NECK FREE FLAP RECONSTRUCTION
Ahmed Ibrahim, MD[1], Kavindu Ndeti[1], Amy Westbrook, RN[2], Kevin Sykes, MPH, PhD[1], Andres Bur, MD[1], Yelizaveta Shnayder, MD[1], Terance Tsue, MD[1], Kiran Kakarala, MD[1]; [1]Department of Otolaryngology-Head and Neck Surgery, University of Kansas School of Medicine, [2]University of Kansas Health System

AHNS-024: POSTOPERATIVE MANAGEMENT OF MICROVASCULAR HEAD AND NECK FREE FLAPS IN A NON-INTENSIVE CARE UNIT SETTING
Swar Vimawala, BS, Michael C Topf, MD, Tony Richa, MD, Adam Luginbuhl, MD, Joseph M Curry, MD, David M Cognetti, MD, Richard A Goldman, MD; Department of Otolaryngology-Head and Neck Surgery, Thomas Jefferson University, Philadelphia, Pennsylvania, USA

4:05 pm – 4:50 pm **Grand 5**

Best of 2019: Practice-Changing Clinical Trials

Moderator: John de Almeida, MD, MSc

RTOG 1016 - *Andrea Trotti, MD*

P16 Outside the Oropharynx - *Loren Mell, MD*

Panel Discussion of Clinical Implications of Emerging Data- *Panelists: Uma Duvvuri, MD, PhD; Lisa Rooper, MD; Tina Rodriguez, MD; Shlomo Koyfman, MD*

Recent clinical trial data for HPV-related head and neck cancers will be presented followed by a panel discussion of the clinical implications of the data.

At the conclusion of this session, participants will be able to:

- ▹ Articulate the most significant recent scientific developments for HPV-positive head and neck cancers.
- ▹ Recognize the role of HPV-positive disease at head and neck sites outside of the oropharynx.

4:05 pm – 5:00 pm **301/302**

Scientific Session 4 - HPV-Positive I

Moderators: Melonie Nance, MD & Thomas Ow, MD

AHNS-025: PATHOLOGIC RESPONSE TO NEOADJUVANT CHEMOTHERAPY IN HPV POSITIVE OROPHARYNGEAL SQUAMOUS CELL CARCINOMA
Sarah Khalife[1], Marco Mascarella[1], Agnihotram V Ramanakumar[1], Keith Richardson[1], Robert Siegel[2], Arjun Joshi[2], Reza Taheri[2], Andrew Fuson[2], Nader Sadeghi[1]; [1]McGill University Health Centre, [2]George Washington University

AHNS-026: PREDICTORS OF POSITIVE MARGINS AND COMPARISON OF POSITIVE MARGIN RATES BY SUBSITE, TUMOR STAGE, AND FACILITY TYPE IN OROPHARYNGEAL TUMORS TREATED WITH TRANS-ORAL ROBOTIC SURGERY (TORS)
Jonathan M Hanna, Elliot Morse, Philip R Brauer, Saral Mehra; Yale School of Medicine

AHNS-027: POST-TREATMENT CLINICAL SURVEILLANCE FOR HPV-ASSOCIATED OROPHARYNGEAL CANCER.
Farzad Masroor, MD[1], Nicholas Cheung, BS[2], David Corpman, BS[3], Diane Carpenter, MPH[4], Kevin H Wang, MD[1]; [1]Kaiser Permanente Oakland Medical Center, [2]University of Southern California Keck School of Medicine, [3]University of California San Francisco School of Medicine, [4]Kaiser Permanente Northern California Division of Research

AHNS-028: EVOLUTION OF POSTSURGICAL DYSPHAGIA AFTER TORS FOR OROPHARYNGEAL CANCER: A PROSPECTIVE REGISTRY ANALYSIS
K Hutcheson, PhD, J Zaveri, MPH, J S Lewin, PhD, C Fuller, MD, PhD, B B Gunn, MD, R Ferrarotto, MD, C Yao, MD, N Gross, MD; MD Anderson Cancer Center

AHNS-029: SMOKING HISTORY DOES NOT HAVE PROGNOSTIC SIGNIFICANCE IN HPV POSITIVE OROPHARYNX CANCER PATIENTS TREATED WITH TRANSORAL ROBOTIC SURGERY
Dylan F Roden, MD, Kealan Hobelmann, Tony Richa, Swar Vimawala, Adam Luginbuhl, Joe Curry, Richard Goldman, David Cognetti; Thomas Jefferson University

AHNS-030: THE RISK AND RATE OF CONTRALATERAL NODAL DISEASE IN SURGICALLY TREATED HPV-RELATED BASE OF TONGUE SQUAMOUS CELL CARCINOMA
Aisling S Last, BA[1], Patrik Pipkorn, MD[1], Stephanie Chen, MD[1], Zain Rizvi, MD[1], Dorina Kallogjeri, MD, MPH[1], Joseph Zenga, MD[2], Ryan S Jackson, MD[1]; [1]Washington University in St. Louis School of Medicine, [2]Medical College of Wisconsin

SCIENTIFIC PROGRAM

AHNS-031: PATIENT-REPORTED QUALITY OF LIFE OUTCOMES AFTER OROPHARYNX INTENSITY MODULATED PROTON THERAPY BASED ON THE FUNCTIONAL ASSESSMENT OF CANCER THERAPY-HEAD AND NECK QUESTIONNAIRE
Houda Bahig, MD, PhD, Gary B Gunn, MD, Kate Hutcheson, PhD, Adam S Garden, MD, Rong Ye, PhD, David I Rosenthal, MD, Jack Phan, MD, PhD, Clifton D Fuller, MD, PhD, William H Morrison, MD, Jay P Reddy, MD, PhD, Neil Gross, MD, Erich Surgis, MD, Maura Gillison, Steven J Frank; MD Anderson Cancer Center

AHNS-032: POSTOPERATIVE FUNCTIONAL STATUS OF THE ELDERLY AFTER TRANSORAL ROBOTIC SURGERY
Meghan B Crawley, MD, MS, Michael C Topf, MD, Kealan Hobelmann, MD, Adam Luginbuhl, MD, Joseph M Curry, MD, David M Cognetti, MD; Thomas Jefferson University Hospital

AHNS-033: THE IMPACT OF EXTRACAPSULAR EXTENSION AND TREATMENT IN PATIENTS WITH EXTRACAPSULAR EXTENSION ON OVERALL MORTALITY IN PATIENTS WITH HPV-POSITIVE OROPHARYNGEAL CANCER: A NATIONAL CANCER DATABASE ANALYSIS OF 3,158 PATIENTS
Andrew T Day, MD, MPH, Ellen Wang, MD, Baran Sumer, Justin Bishop, Saad Khan, MD, David J Sher; UT Southwestern Medical Center

4:50 pm – 5:00 pm — **Grand 5**

AHNS Research Awards

5:00 pm - 6:00 pm — **Grand 5**

AHNS Business Meeting

6:00 pm - 7:00 pm — **502/503**

Fellowship Information Session

THURSDAY, MAY 2, 2019

6:00 am- 7:00 am — **301/302**

Scientific Session 5 - Value I

Moderators: Carol Lewis, MD & Benjamin Roman, MD

AHNS-034: UNDERSTANDING FINANCIAL TOXICITY IN HEAD AND NECK CANCER SURVIVORS AS A FRAMEWORK FOR SHARED DECISIONS AND AVOIDANCE OF LOW-VALUE CARE
Leila J Mady, MD, PhD, MPH[1], Maryanna S Owoc, BS[1], Kate Meng Zhao[2], Lingyun Lyu, MS[3], Michael Corcoran[2], Shyamal D Peddada, PhD[3], Teresa Hagan Thomas, PhD, RN[4], Lindsay M Sabik, PhD[5], Marci L Nilsen, PhD, RN, CHPN[4], Jonas T Johnson, MD[1]; [1]University of Pittsburgh School of Medicine, [2]UPMC Insurance Services Strategic Analysis of Clinical Affairs, [3]University of Pittsburgh Graduate School of Public Health, [4]University of Pittsburgh School of Nursing, [5]University of Pittsburgh Health Policy Institute

AHNS-035: THE EFFECT OF MULTIDISCIPLINARY TUMOR BOARD MEETINGS ON TREATMENT RECOMMENDATIONS IN PATIENTS WITH HEAD AND NECK CANCER
Samantha Tam, MD, MPH[1], Derek A Haas, MBA[2], Moran Amit, MD, PhD[3], Michael E Porter, PhD[4], Randal S Weber, MD[1], Ehab Y Hanna, MD[1]; [1]University of MD Anderson Cancer Center, [2]Avant-Garde Health, [3]Houston Methodist Hospital, [4]Harvard Business School

AHNS-036: A PARTIALLY OBSERVED MARKOV DECISION PROCESS MODEL FOR HEAD AND NECK CANCER SURVEILLANCE
Temitayo Ajayi[1], Sweet Ping Ng[2], Andrew Schaefer[1], Courtney Pollard[2], Houda Bahig[2], David Rosenthal[2], G Gunn[2], Steven Frank[2], Jack Phan[2], William Morrison[2], Jason Johnson[2], Mona Kamal[2], Abdallah Mohamed[2], Erich Sturgis[2], Adam Garden[2], Clifton Fuller[2]; [1]Rice University, [2]MD Anderson

AHNS-037: REDUCED ACCESS TO CARE AMONG HEAD AND NECK CANCER PATIENTS
Sean T Massa, MD, Ryan S Jackson, MD, Patrik Pipkorn, MD, Jose P Zevallos, MD, MPH; Washington University

AHNS-038: IMPACT OF DELAYED TIME TO TREATMENT INITIATION IN HEAD AND NECK SQUAMOUS CELL CARCINOMA PATIENTS IN AN UNDERSERVED URBAN POPULATION
David Liao[1], Nicolas F Schlecht, PhD[2], Gregory Rosenblatt, PhD[1], Corin M Kinkhabwala, BA[1], James A Leonard, BS[1], Ryan S Ference, BA[1], Michael B Prystowsky, MD, PhD[3], Bradley Schiff, MD[3], Thomas J Ow, MD, MS[3], Richard Smith, MD[3], Vikas Mehta, MD, MPH[3]; [1]Albert Einstein College of Medicine, [2]Roswell Park Comprehensive Cancer Center, [3]Montefiore Medical Center/Albert Einstein College of Medicine

AHNS-039: ENHANCED RECOVERY AFTER SURGERY (ERAS): IMPACT ON INTENSIVE CARE UNIT (ICU)STAY, HOSPITAL LENGTH OF STAY (LOS) AND NARCOTIC USE.
Emly Ramirez, RN, Danny Jandali, MD, Claire Hinkle, PAC, Meghan Hoppes, PAC, Ryan Smith, MD, Peter Revenaugh, MD, Samer Al-Khudari, MD, Kerstin Stenson, MD, Deborah Vaughan, PAC; Rush university MEdical center

AHNS-040: HEAD AND NECK CANCER READMISSION REDUCTION (HANCARRE) PROJECT : SUCCESSES AND LESSONS LEARNED ONE YEAR LATER
Sara Yang, MD, Carol Bier-Laning, MD, FACS; Department of Otolaryngology Head and Neck Surgery Loyola University Medical Center

AHNS-041: GENDER DISPARITIES IN SALIVARY MALIGNANCIES: IS GENDER IMPACTING ONCOLOGICAL OUTCOMES?
Ximena Mimica, MD, Marlena McGill, BS, Ashley Hay, MD, Daniella K Zanoni, MD, Jatin P Shah, MD, Richard J Wong, Marc A Cohen, MD, Snehal G Patel, MD, Ian Ganly, MD, PhD; Memorial Sloan Kettering Cancer Center

AHNS-042: INTRAOPERATIVE NERVE MONITORING PARAMETERS PREDICT FACIAL NERVE OUTCOME IN PAROTID SURGERY
Catherine T Haring, MD, Andrew J Rosko, MD, Susan E Ellsperman, MD, Paul Kileny, PhD, Deborah Kovatch, MA, MBA, CCCA, Bruce Edwards, AuD, Matthew E Spector, MD; University of Michigan, Department of Otolaryngology- Head & Neck Surgery

7:00 am – 7:55 am — **301/302**

Scientific Session 6 – HPV-Negative II

Moderators: Andrew Day, MD & William Ryan, MD

AHNS-045: EARLY-STAGE LARYNGEAL CANCER: TREATMENT PATTERNS AND THE EFFECT OF TREATMENT FACILITY

SCIENTIFIC PROGRAM

Eric L Bauer, MD, Angela Mazul, PhD, Jose Zevallos, MD; Washington University in Saint Louis

AHNS-046: PREDICTORS OF POST-OPERATIVE RADIATION IN CT1-T2N0 GLOTTIC CANCER: A STUDY OF THE NATIONAL CANCER DATABASE
Dustin A Silverman, MD, Kevin Y Zhan, MD, Sidharth V Puram, MD, PhD, James W Rocco, MD, PhD, Matthew O Old, MD, Stephen Y Kang, MD; The Ohio State University - Department of Otolaryngology - Head & Neck Surgery, The James Cancer Center and Solove Research Institute

AHNS-047: HOSPITAL MARKET CONCENTRATION AND COSTS OF LARYNGECTOMY
Peter S Vosler, MDPhD[1], J M Austin, PhD[1], Carole Fakhry, MD, MPH[1], David W Eisele, MD[1], Kevin D Frick, PhD[2], Christine G Gourin, MD, MPH[1]; [1]Johns Hopkins Medicine, [2]Johns Hopkins Carey Business School

AHNS-048: SELECTIVE NECK DISSECTION AT THE TIME OF SALVAGE SURGERY: A META-ANALYSIS AND SEER DATABASE STUDY
Andrey Finegersh, MD, PhD, Kevin Brumund, MD, Ryan Orosco, MD; University of California, San Diego

AHNS-049: COMPARATIVE ANALYSIS OF STAGE AT PRESENTATION, PROGNOSIS AND ASSESSING DELAY IN TREATMENT IN ORAL CAVITY SQUAMOUS CELL CARCINOMA BETWEEN RURAL AND URBAN PATIENTS IN AN UNINSURED POPULATION
Diptarka Bhattacharyya, MD[1], Lubna C Sayyed, MD[2], Abhishek C Ramadhin, MD[3]; [1]Sinai Hospital, [2]Nair Hospital, [3]Tata Memorial Hospital

AHNS-050: DIAGNOSTIC YIELD OF TRANSORAL ROBOTIC BASE OF TONGUE MUCOSECTOMY IN HPV NEGATIVE CARCINOMA OF UNKNOWN PRIMARY
Mark Kubik, MD[1], Hani Channir, MD[2], Niclas Rubek, MD[2], Seungwon Kim, MD[3], Robert L Ferris, MD, PhD[3], Christian Von Buchwald, MD[2], Umamaheswar Duvvuri, MD, PhD[3]; [1]Medical University of South Carolina, [2]Righospitalet, Copenhagen University Hospital, [3]University of Pittsburgh Medical Center

AHNS-051: EROSIVE MANDIBULAR INVASION DEFINED
Arya W Namin, MD, Robert P Zitsch III, MD, Lester J Layfield, MD; University of Missouri

AHNS-052: SOCIOECONOMIC STATUS, LENGTH OF HOSPITAL STAY, AND POST-OPERATIVE COMPLICATIONS IN ORAL CAVITY SQUAMOUS CELL CARCINOMA
Michael Xie, BHSc, Michael K Gupta, MD, MSc, FRCSC, Stuart D Archibald, MD, FRCSC, Stanley B Jackson, MD, FRCSC, Han Zhang, MD, FRCSC; McMaster University

7:00 am – 7:10 am **Grand 5**

Best Abstracts in Cutaneous Malignancy

Moderator: Daniel Clayburgh, MD

AHNS-043: OUTCOMES OF CHRONICALLY IMMUNOSUPPRESSED PATIENTS WITH CUTANEOUS SQUAMOUS CELL CARCINOMA OF THE HEAD AND NECK.
Christopher M Yao, MD, Samantha Tam, MD, MPH, Mona V Gajera, BS, Neha Desai, MPH, Xiaoning Luo, MD, PhD, Rachel Treistman, BS, Anshu Khanna, MPH, Randal S Weber, MD, Jeffrey N Myers, MD, PhD, Neil D Gross, MD; University of Texas MD Anderson Cancer Center

AHNS-044: DEVELOPMENT OF GENE EXPRESSION SIGNATURE FOR RISK ASSESSMENT IN CUTANEOUS SQUAMOUS CELL CARCINOMA WITH A SUBANALYSIS IN THE HEAD AND NECK REGION
Jason G Newman, MD[1], Ashley Wysong, MD[2], Kyle R Covington, PhD[3], Sarah J Kurley, PhD[3], Kristen M Plasseraud, PhD[3], Robert W Cook, PhD[3], Chrysalyne D Schmults, MD, MSCE[4], Sarah T Arron, MD, PhD[5]; [1]University of Pennsylvania Health System, [2]University of Nebraska Medical Center, [3]Castle Biosciences, Inc., [4]Brigham and Women's Hospital, [5]University of California San Francisco

7:10 am – 7:55 am **Grand 5**

Melanoma Debates: Is Head and Neck Melanoma Different?

Moderator: Daniel Clayburgh, MD

Debate I: Sentinel Lymph Node Biopsy v. **Completion Neck Dissection for Positive Sentinel Lymph Node Biopsy** - *Carol Bradford, MD v. Brian Moore, MD*

Rebuttals, Questions and Answers

Debate II: Adjuvant Management of Node-Positive Melanoma: Radiotherapy v. **Immunotherapy** - *Chris Barker, MD v. Chad Zender, MD*

Rebuttals, Questions and Answers

Debates will highlight current research and controversies in melanoma regarding the role of completion neck dissection after positive sentinel lymph node biopsy and the evolving role of adjuvant therapies in high-risk cases (radiotherapy or immunotherapy).

At the conclusion of this session, participants will be able to:

- Evaluate the potential utility of completion neck dissection after positive sentinel node biopsy.
- Explain the role of adjuvant radiation therapy in the management of melanoma.
- Understand indications for adjuvant immunotherapy in the management of melanoma

8:00 am – 8:45 am **Grand 5**

Endocrine Tumor Board: Management of Advanced Thyroid Malignancy - The Evolving Role of Targeted Therapy and Surgery

Moderator: Mark Zafereo, MD

Panelists: Naifa Busaidy, MD; Ian Ganly, MD, PhD; Ana Ponce Kiess, MD, PhD; Lori Wirth, MD

A multidisciplinary panel will discuss novel therapeutic strategies for patients with advanced thyroid malignancies including medullary, Hurthle cell, and anaplastic cancers.

At the conclusion of this session, participants will be able to:

- Recognize areas of recent scientific discovery in the molecular genetics of thyroid malignancy.
- Identify specific thyroid tumor pathologies and tumor genetic profiles that may be amenable to targeted drug therapy.
- Integrate multidisciplinary approach of targeted therapy

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and surgery into care of patients with advance thyroid malignancy.

8:00 am – 8:45 am **301/302**

Scientific Session 7 - Reconstructive Advances II

Moderators: Elizabeth Nicolli, MD & Chase Heaton, MD

AHNS-053: USE OF A NON-ICU SPECIALTY WARD FOR IMMEDIATE POST-OPERATIVE MANAGEMENT OF HEAD AND NECK FREE FLAPS; A RANDOMIZED CONTROLLED TRIAL
Brian Cervenka, MD, Lindsey Olinde, MD, Donald G Farwell, MD, Michael Moore, MD, Arnaud Bewley, MD; UC Davis

AHNS-054: OSSEOINTEGRATION OF SCAPULAR TIP FREE FLAPS IN MANDIBULAR RECONSTRUCTION
Mohammed Mamdani, MD, PhD, Catherine Lumley, MD, Jeffrey Blumberg, MD, Ben Huang, MD, Samip N Patel, MD; University of North Carolina, Chapel Hill

AHNS-055: ASSESSMENT OF SUPPORT AND CAREGIVER BURDEN AMONG PATIENTS UNDERGOING MICROVASCULAR FREE TISSUE TRANSFER FOR HEAD AND NECK RECONSTRUCTION
Mary J Xu, MD, Karolina A Plonowska, BA, Amanda Humphrey, BA, Zev Gurman, BA, William R Ryan, MD, Ivan El-Sayed, MD, Chase M Heaton, MD, Rahul Seth, MD, Patrick K Ha, MD, P. D Knott, MD; University of California, San Francisco

AHNS-056: INEFFICIENCY DURING MICROVASCULAR FREE FLAP RECONSTRUCTIVE SURGERY: SUPPLIES AND COMMUNICATION
Rohini R Bahethi, BS[1], Solomon G Seckler, BA[1], Katelyn O Stepan, MD[1], Mingyang L Gray, MD[1], Eliezer Kinberg, MD[1], Samuel DeMaria Jr., MD[2], Brett A Miles, DDS, MD, FACS[1]; [1]Department of Otolaryngology-Head and Neck Surgery, Icahn School of Medicine at Mount Sinai, New York, New York, USA., [2]Department of Anesthesiology, Perioperative and Pain Medicine, Icahn School of Medicine at Mount Sinai, New York, New York, USA.

AHNS-057: COST AND CLINICAL OUTCOMES OF GENERAL FLOOR CARE VERSUS INTENSIVE CARE UNIT MANAGEMENT IN THE POSTOPERATIVE SETTING FOR PATIENTS UNDERGOING HEAD AND NECK FREE FLAPS.
Jaime A Aponte Ortiz[1], Alexandra J Greenberg-Worisek, PhD[2], John P Marinelli[3], Grant M Spears, MS[4], James Clark, MD[5], Eric J Moore, MD[6], Sue L Visscher, PhD[7], Bijan J Borah, PhD[7], Jeffrey R Janus[6]; [1]Center for Clinical and Translational Science, Mayo Clinic; University of Puerto Rico School of Medicine, [2]Department of Epidemiology, Mayo Clinic Rochester, [3]Mayo Clinic School of Medicine, Mayo Clinic, Rochester, [4]Biomedical Statistics and Informatics, Mayo Clinic Rochester, [5]John?s Hopkins Bayview Medical Center Department of Otolaryngology ? Head and Neck Surgery, [6]Department of Otolaryngology- Head and Neck Surgery, Mayo Clinic Rochester, [7]Robert D. and Patricia E. Kern Center for the Science of Health Care Delivery, Mayo Clinic

AHNS-058: LONG-TERM OUTCOMES AND COMPLICATIONS OF FIBULA FREE FLAPS IN HEAD AND NECK RECONSTRUCTION OVER A 10-YEAR PERIOD
Brian Swendseid, MD, Ayan Kumar, Richard Goldman, MD, Adam Luginbuhl, MD, Howard Krein, MD, Ryan Heffelfinger, MD, Joseph Curry, MD; Thomas Jefferson University Hospital

AHNS-059: THE IMPACT OF ADJUVANT TREATMENT ON ADVANCED/HIGH-RISK CUTANEOUS SQUAMOUS CELL CARCINOMA OF THE HEAD AND NECK AFTER DEFINITIVE SURGICAL RESECTION
Samuel J Trosman, MD[1], Angela Zhu, BS[2], Zoukaa B Sargi, MD[3]; [1]Mount Sinai Icahn School of Medicine, [2]University of Miami Miller School of Medicine, [3]University of Miami

8:50 am- 9:45 am **Grand 5**

Best of 2019: Pivotal International Trials

Moderator: Dan Fliss, MD

Identifying the "Supra High Risk" Group within the POST (TROG 05.01) Study (Australia) - *Sandro Porceddu, MD*

Management of the No Neck in Early Oral Cancer (India) - *Pankaj Chaturvedi, MBBS, MS*

DeLos-II Trial in Resectable Laryngeal Cancer (Germany) - *Andreas Dietz, MD*

Results from recent pivotal international prospective head and neck cancer trials will be presented.

At the conclusion of this session, participants will be able to:

- Discuss experimental de-escalation strategies for HPV-positive Oropharynx Cancer.
- Understand the rationale for prophylactic neck dissection in oral cavity cancer.
- Identify common challenges and successful strategies for when running clinical trials internationally.

8:50 am – 9:00 am **301/302**

Best of Skull Base Abstracts

Moderator: Ivan El-Sayed, MD

AHNS-060: OSTEOGENIC DIFFERENTIATION AND VASCULOGENESIS OF PERICRANIUM DERIVED CELLS IN 3-DIMENSIONS: A POTENTIAL REPOSITORY FOR BONE IN PATIENTS UNDERGOING CRANIOFACIAL RECONSTRUCTION.
Christoph M Prummer, MD, Serban San Marina, MD, PhD, Stephen G Voss, Danielle E Hunter, Jeffrey R Janus, MD; Mayo Clinic- Rochester

AHNS-061: CHARACTERIZATION OF MALIGNANT PARAGANGLIOMAS OF THE HEAD AND NECK: A MULTI-DECADE EXPERIENCE OF A SINGLE INSTITUTION
Hilary McCrary, MD, MPH[1], Patrick Carpenter, MD[1], Geoffrey Casazza, MD[1], Eric Babajanian, MD[1], Anne Naumer, MS[2], Samantha Greenberg, MS, MPH[2], Wendy Kohlmann, MS[2], Richard Cannon, MD[1], Marcus M Monroe, MD[1], Jason P Hunt, MD[1], Luke Buchmann, MD[1]; [1]University of Utah Department of Surgery, Division of Otolaryngology, [2]2University of Utah, Genetic Counseling at the Huntsman Cancer Institute

9:00 am – 9:45 am **301/302**

Skull Base Cancer Debates: Should I Operate?

Moderator: Ivan El-Sayed, MD

Debate I: Intracranial Extension

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Operate v. **Not Operate** - *Adam Zanation, MD v. Christopher Rassekh, MD*

Rebuttals, Questions and Answers

Debate II: Orbital Encroachment

Resect Orbit v. **Not Resect** - *Mathew Geltzeiler, MD v. Shirley Y. Su, MD*

Rebuttals, Questions and Answers

Case-based debates on management of complicated skull base malignancies will highlight surgical versus nonsurgical treatment options, focusing on pathology with intracranial extension and encroachment of the orbit.

At the conclusion of this session, participants will be able to:

- Recognize the potential role of surgery in skull base malignancies with intracranial extension.
- Discuss the pros and cons of orbital preservation in skull base malignancies that encroach the orbit.
- Compare the advantages and disadvantages of open and endoscopic sinonasal surgery in complex sinonasal malignanices.

9:45 am - 10:15 am — **Lone Star Ballroom**

Break in Exhibit Hall

10:15 am – 11:00 am — **Grand 5**

Novel Approaches to an Old Problem: Re-thinking Oral Cavity Cancer

Moderator: Maie St. John, MD, PhD

Epidemiologic Changes - *Jose P. Zevallos, MD, MPH*

New Imaging Modalities - *Eben L. Rosenthal, MD*

Sentinel Node Biopsy - *Stephen Y. Lai, MD, PhD*

Neoadjuvant Therapy - *Bryan R. Bell, MD, DDS*

Case-based format will be used to highlight observed epidemiologic trends in oral cavity cancers, novel imaging approaches, primary therapeutic strategies and neo-adjuvant therapies including immunotherapy.

At the conclusion of this session, participants will be able to:

- Discuss changes in incidence trends and current understanding of risk factors for oral cavity cancers.
- Identify patients that may be candidates for novel trials and multi modality therapies.
- Discuss the advantages and disadvantages of sentinel lymph biopsy for oral cavity cancer
- Summarize new imaging modalities for oral cavity cancer and their potential impact on therapy.

10:15 am – 11:00 am — **301/302**

Scientific Session 8 – Outcomes

Moderators: Michael Moore, MD & Luiz Kowalski, MD, PhD

AHNS-062: PREDICTORS OF DEPRESSION AND ANXIETY IN HEAD AND NECK CANCER PATIENTS
Ashok R Jethwa, Katrina Hueniken, Catriona M Douglas, Geoffrey Liu, Andrew Bayley, Shao Hui Huang, Aaron Hansen, David P Goldstein, Madeline Li, John R de Almeida; Princess Margaret Cancer Center

AHNS-063: QUALITY OF LIFE, TUMOR SITE, AND AGE PREDICT DEPRESSION IN HEAD & NECK CANCER PATIENTS
Carissa M Thomas, MD, PhD[1], Jie Su, MSc[2], Wei Xu, PhD[2], John de Almeida, MD[1], Patrick Gullane, MD[1], Ralph Gilbert, MD[1], Dale Brown, MD[1], Jonathan Irish[1], Shabbir Alibhai[1], David Goldstein[1]; [1]University of Toronto, [2]Princess Margaret Hospital

AHNS-064: A LONGITUDINAL PROSPECTIVE MIXED MODEL ANALYSIS OF PATIENT REPORTED OUTCOMES AFTER HEAD AND NECK CONFORMAL REIRRADIATION
Courtney Pollard, III, MD, PhD[1], Theresa Nguyen, BS[1], Sweet P Ng, MBBS[1], Gary B Gunn, MD[1], Adam S Garden, MD[1], Steven J Frank, MD[1], Jay P Reddy, MD, PhD[1], William H Morrison, MD[1], Clifton D Fuller, MD, PhD[1], David I Rosenthal, MD[1], Charles S Cleeland, PhD[2], Tito R Mendoza, PhD[2], Jack Phan, MD, PhD[1]; [1]Department of Radiation Oncology, University of Texas MD Anderson Cancer Center, Houston, TX, USA, [2]Department of Symptom Research, University of Texas MD Anderson Cancer Center, Houston, TX, USA

AHNS-065: THE ASSOCIATION BETWEEN PREOPERATIVE FUNCTIONAL PERFORMANCE AND OUTCOMES AFTER SURGICAL TREATMENT OF HEAD AND NECK CANCER
Sampat Sindhar, Dorina Kallogjeri, MD, MPH, Troy S Wildes, MD, Michael S Avidan, MBBCh, FCASA, Jay F Piccirillo, MD, FACS; Washington University in St. Louis, School of Medicine

AHNS-066: VARIATIONS IN HEALTH LITERACY AND FOLLOW-UP AMONG DIFFERENT HEAD AND NECK CANCER SCREENING SITES
Raquel Zemtsov, MD, MPH[1], Gregory Zemtsov, BA[2], Meredith Tabangin, MPH[3], Mekibib Altaye, PhD[3], Alice Tang[1]; [1]University of Cincinnati College of Medicine, Department of Otolaryngology - Head and Neck Surgery, [2]University of Cincinnati College of Medicine, [3]Cincinnati Children's Hospital Medical Center, Division of Biostatistics and Epidemiology

AHNS-067: ELEVATED RISK OF HEAD AND NECK CANCER IN PATIENTS WITH HISTORY OF HEMATOLOGIC MALIGNANCY
Alia Mowery, BS, Daniel Clayburgh, MD, PhD; Oregon Health and Science University

11:00 am – 12:00pm — **Grand 5**

Presidential Address and Awards: The Future of AHNS in a Competitive Environment: Is Value-Based Care Mere Theory or an Existential Strategy?

Ehab Hanna, MD

Introduction by Cherie-Ann Nathan, MD, Incoming AHNS President

12:00 pm – 1:00 pm — **Lone Star Ballroom**

Lunch in Exhibit Hall

1:00 pm – 1:45 pm — **301/302**

Scientific Session 9- Advances in Systemic Therapy

Moderator: Jeffrey Liu, MD & Raj Mandal, MD

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AHNS-068: COMBINED INHIBITION OF WEE1 AND RAD51 ENHANCES CELL KILLING IN HNSCC
Antje Lindemann, Ameeta A Patel, Hideaki Takahashi, Lin Tang, Abdullah A Osman, Jeffrey N Myers; The University of Texas MD Anderson Cancer Center

AHNS-069: ROLE OF INDUCTION CHEMOTHERAPY FOR ORAL CAVITY SQUAMOUS CELL CARCINOMA
Ahmed S Abdelmeguid, MD, PhD[1], Natalie L Silver, MD, PhD[2], Mongkol Boonsripitayanon, MD[1], Renata Ferrarotto, MD[1], Ann M Gillenwater[1], Ehab Y Hanna, MD[1]; [1]University of Texas MD Anderson Cancer Center, [2]University of Florida College of Medicine

AHNS-070: SAFETY, PHARMACOKINETICS, AND PHARMACODYNAMICS OF NF-KB MEDIATED APOPTOSIS OF THE ANTI-INFLAMMATORY BOTANICAL DRUG APG-157 IN PATIENTS WITH ORAL SQUAMOUS CELL CARCINOMA
Saroj Basak, PhD[1], Marco Morselli, PhD[1], Alakesh Bera, PhD[2], Alexander Yoon, BS[1], Meera Srivastava, PhD[2], Kym F Faull, PhD[1], Matteo Pellegrini, PhD[1], Chan Jeong, BS[1], Eri Srivatsan, PhD[3], Marilene B Wang[1]; [1]UCLA, [2]Uniformed Services University of Health Sciences, [3]VA Greater Los Angeles Healthcare System

AHNS-071: HEAD AND NECK SURGEON'S PERCEPTION REGARDING PALLIATIVE CARE
Yemeng Lu-Myers, MD, MPH, Rodney Taylor, MD; University of Maryland

AHNS-072: ASSOCIATION OF NEUTROPHIL-TO-LYMPHOCYTE RATIO DYNAMICS AND OUTCOMES WITH IMMUNE CHECKPOINT INHIBITION IN HEAD AND NECK SQUAMOUS CELL CARCINOMA
Marcus A Couey, MD, DDS[1], Mark T Schmidt, BSc[1], Allen C Cheng, MD, DDS[2], Ashish A Patel, MD, DDS[2], R. Bryan Bell, MD, DDS[1], Tanguy Y Seiwert, MD[3], Rom S Leidner, MD[1]; [1]Earle A. Chiles Research Institute at Robert W. Franz Cancer Center, Providence Cancer Institute, Portland, OR, [2]Head and Neck Institute, Portland, OR, [3]Department of Medicine, Section of Hematology/Oncology, The University of Chicago Medicine, Chicago, IL

AHNS-073: THE EFFECT OF METFORMIN ON IMMUNE INFILTRATE IN HEAD AND NECK SQUAMOUS CELL CARCINOMA
Dev Amin, BS, Antonio Richa, MD, Mehri Mollaee, MD, Diana Whitaker-Menezes, MS, Tingting Zhan, PhD, Ulrich Rodeck, MD, PhD, Charalambos Solomides, MD, Robert Stapp, DO, Ubaldo Martinez-Outschoom, MD, PhD, Adam Luginbuhl, MD, David Cognetti, MD, Joseph Curry, MD; Thomas Jefferson University

AHNS-074: THE IMPACT OF NEOADJUVANT PRE-SURGICAL PD-1 INHIBITION ON THE IMMUNE PHENOTYPE IN PATIENTS WITH ORAL CAVITY CANCER.
David M Neskey, MD, MSCR[1], John Kaczmar, MD[1], Hannah Knochelman, BS[1], Megan Wyatt, BS[1], Ying Xiong, PhD[1], Michael Froehlich, BS[1], Anvesh Kompelli, BS[2], M. Rita Young, PhD[1], Chrystal Paulos, PhD[1]; [1]Medical University of South Carolina, [2]Louisiana State University ShreveportLouisiana State University Health - Shreveport School of Medicine

1:00 pm – 1:50 pm **Grand 5**

Current Concepts in Education

Moderator: Babak Givi, MD

Changes in ABOTO - *Brian Nussenbaum, MD*

Simulation Training in Surgical Education - *Kelly M. Malloy, MD*

AHNS TORS Training Curriculum for Fellows; Presentation of Certificates to 2019 Graduates - *Neil D. Gross, MD*

The executive director of American Board of Otolaryngology-Head and Neck Surgery will provide an update on recent changes. Implementation of new tools in surgical education will be discussed. The AHNS TORS training curriculum will be presented and inaugural graduates recognized.

At the conclusion of this session, participants will be able to:

- Understand the newly instituted AHNS TORS Curriculum for fellows.
- Develop adequate training course/programs to incorporate new technologies in surgical education (simulation,).
- Recognize the new changes in the ABOTO certification process.

1:00 pm – 1:10 pm **Grand 6**

Best of Reconstructive Abstracts

Moderator: Brett Miles, MD

AHNS-075: PROGNOSTIC FACTORS ASSOCIATED WITH ACHIEVING TOTAL ORAL DIET FOLLOWING OSTEOCUTANEOUS MICROVASCULAR FREE TISSUE TRANSFER RECONSTRUCTION IN THE HEAD AND NECK
Sagar Kansara, MD[1], Tao Wang, PhD[1], Sina Koochakzadeh, BS[2], Nelson Liou, MD[1], Mitchell Worley, MD[2], Judith Skoner, MD[2], Joshua Hornig, MD[2], Terry Day, MD[2], Andrew Huang, MD[1]; [1]Baylor College of Medicine, [2]Medical University of South Carolina

AHNS-076: MORTALITY AND MORBIDITY IN PATIENTS 80 YEARS AND OLDER UNDERGOING MAJOR HEAD AND NECK ABLATION AND RECONSTRUCTION - A MULTI-INSTITUTIONAL STUDY
Tanya Fancy, MD[1], Jason Rich, MD[2], Andrew Huang[3], Rui Fernandes[4], Evan Graboyes[5], Jesse Ryan[6], Mark Wax[7]; [1]West Virginia University, [2]Washington University, [3]Baylor College of Medicine, [4]University of Florida, [5]Medical University of South Carolina, [6]Upstate University Health Systems, Syracuse, [7]Oregon Health & Science University

1:10 pm – 1:55 pm **Grand 6**

Debate: Reconstruction of Head and Neck Cancer Defects

Moderator: Brett Miles, MD

Debate I: Optimal Maxillectomy Defect Rehabilitation
Obturator v. **Surgical Reconstruction** - *Neal Futran, MD, DMD v. Ralph Gilbert, MD*

Rebuttals, Questions and Answers

Debate II: Functional Reconstruction of Oral Cavity Cancer Defects

Pedicled Flap v. **Free Flap** - *Urjeet Patel, MD v. Douglas Chepeha, MD*

Rebuttals, Questions and Answers

Complex head and neck cancer cases will serve as the basis of debate between experts for two controversial topics in head and neck reconstruction.

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At the conclusion of this session, participants will be able to:

- Appreciate indications for obturator placement and surgical reconstruction of maxillectomy defects.
- Compare and assess reconstructive options for oral cavity cancer to optimize function.
- Integrate evidence-based reconstructive decisions for appropriate reconstruction of the head and neck.

1:55 pm – 2:45 pm **Grand 5**

Hayes Martin Lecture

Life Lessons from my Thirty-Seven Years as a Navy SEAL

Introduction by Ehab Hanna, MD

Speaker - Admiral William McRaven

2:45 pm – 3:15 pm **Lone Star Ballroom**

Break in Exhibit Hall

3:15 pm – 4:00 pm **301/302**

Scientific Session 10 – Value II

Moderators: Jennifer Cracchiolo, MD & Wais Rahmati, MD

AHNS-077: IDENTIFICATION OF HIGH-COST PATIENTS AFTER HEAD AND NECK CANCER SURGERY
Michelle Chen, MD, Eben L Rosenthal, MD, Vasu Divi, MD; Stanford University

AHNS-078: EVALUATION OF REASONS FOR NCCN GUIDELINE NON-COMPLIANCE IN ADVANCED STAGE HEAD AND NECK CANCER
Philip R Brauer, BA, Elliot Morse, BS, Joseph Earles, MD, Saral Mehra, MD, MBA; Yale School of Medicine

AHNS-079: DERIVING HEALTH UTILITY SCORES FROM HEAD AND NECK CANCER QUALITY OF LIFE INSTRUMENTS: MAPPING UWQOL AND EORTC QLQ-H&N35 ONTO EQ-5D AND HUI-3 INDICES
Christopher W Noel, MD[1], Robert F Stephens[1], Jie Su[2], Wei Xu, PhD[2], Meredith Giuliani, MBBS, MEd[2], Eric Monteiro, MD, MSc[1], David Goldstein, MD, MSc[1], John R de Almeida, MD, MSc[1]; [1]University of Toronto, Department of Otolaryngology - Head and Neck Surgery, [2]University of Toronto, Department of Radiation Oncology

AHNS-080: INSURANCE COVERAGE CHANGE AND STAGE AT DIAGNOSIS AMONG NONELDERLY PATIENT WITH HEAD AND NECK SQUAMOUS CELL CARCINOMA AFTER THE AFFORDABLE CARE ACT - NATIONAL CANCER DATABASE SURVEY
Krupal B Patel, MD, MSc[1], Caitlin McMullen, MD[1], Kathryn Vorwald, DDS, MD[1], Anthony C Nichols, MD[2], Stephen Kang, MD[3], James W Rocco, MD[3], Matthew Old[3]; [1]Moffitt Cancer Center, [2]Western University, [3]The Ohio State University

AHNS-081: ASSESSING THE VALUE EQUATION FOR OLDER PATIENTS RECEIVING RADIOTHERAPY WITH OR WITHOUT CISPLATIN OR CETUXIMAB FOR LOCOREGIONALLY-ADVANCED HEAD AND NECK CANCER
Anirudh Saraswathula, BS[1], Michelle M Chen, MD, MHS[2], Alexander D Colevas, MD[3], Vasu Divi, MD[2]; [1]Stanford University School of Medicine, [2]Department of Otolaryngology-Head and Neck Surgery, Stanford University School of Medicine, [3]Division of Oncology, Department of Medicine, Stanford University School of Medicine

AHNS-082: SOCIOECONOMIC AND DEMOGRAPHIC VARIATION IN INSURANCE COVERAGE AMONG HEAD AND NECK CANCER PATIENTS AFTER THE AFFORDABLE CARE ACT
Neelima Panth, MPH[1], Justin Barnes, MS[2], Rosh K Sethi, MD, MPH[3], Eric Adjei Boakye, PhD[4], Mark A Varvares, MD[3], Nosayaba Osazuwa Peters, PhD, BDS, MPH, CHES[2]; [1]Duke University School of Medicine, [2]St. Louis University School of Medicine, [3]Department of Otolaryngology, Massachusetts Eye and Ear Infirmary, [4]Southern Illinois University School of Medicine

AHNS-083: SURGICAL MARGINS IN SALIVARY MALIGNANCY: WHEN IS NEAR ENOUGH, GOOD ENOUGH?
M A Hanson, MD, X Mimica, MD, M McGill, BS, J Wu, MD, D K Zanoni, MD, A Hay, MD, J P Shah, MD, R J Wong, MD, M A Cohen, MD, S G Patel, MD, I Ganly, MD, PhD; Memorial Sloan Kettering Cancer Center

3:15 pm – 4:00 pm **Grand 5**

Immunotherapy 101 for Head and Neck Cancer

Moderator: Andrew Sikora, MD, PhD

Basics of Immunotherapy and Why is it Attractive for Head and Neck Cancer Treatment? - *Nicole Schmitt, MD*

What is the Value of Immunotherapy in the Neoadjuvant and Salvage Surgical Settings? - *Tanguy Seiwert, MD*

Understanding a Connection between Genetics and Immunotherapy - *Nishant Agrawal, MD*

This session will use a didactic and case presentation format to highlight important principles of cancer/immune interactions, and describe recent advances in immunotherapy.

At the conclusion of this session, participants will be able to:

- Recognize critical aspects of the tumor microenvironment which make head and neck cancer responsive to immunotherapy.
- Describe potential complication of immunotherapy in head and neck cancer patients.
- Understand the importance of mutational burden and mutational antigens in immunotherapy.

3:15 pm – 3:25 pm **Grand 6**

Best of Salivary Abstracts

Moderator: Patrick Ha, MD

AHNS-084: THE ROLE OF ELECTIVE NECK DISSECTION IN CN0 PATIENTS WITH HIGH-GRADE PAROTID CANCER AMONG A HOSPITAL-BASED NATIONAL COHORT, 2004 - 2013.
Richard A Harbison, MD, MS[1], Alan Gray[1], Ted Westling[2], Marco Carone[1], Neal Futran[1], Jeffrey J Houlton[1]; [1]University of Washington, [2]University of Pennsylvania

AHNS-085: SINGLE CELL RNA-SEQUENCING REVEALS INTER-TUMORAL AND INTRA-TUMORAL HETEROGENEITY IN MYB-DRIVEN PROGRAMS IN ADENOID CYSTIC CARCINOMA
Anuraag S Parikh, MD[1], Sidharth V Puram, MD, PhD[2], Yotam

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Drier, PhD[3], William C Faquin, MD, PhD[1], Armida Lefranc-Torres, MD[1], Jeremy D Richmon, MD[1], Kevin S Emerick, MD[1], Daniel G Deschler, MD[1], Mark A Varvares, MD[1], Bradley E Bernstein, MD, PhD[3], Derrick T Lin, MD[1]; [1]Massachusetts Eye and Ear Infirmary, [2]Massachusetts Eye and Ear Infirmary, Ohio State University, [3]Massachusetts General Hospital

3:25 pm – 4:10 pm **Grand 6**

Moving Beyond Histology: Biomarkers for Salivary Gland Cancer

Moderator: Patrick Ha, MD

Genetic and Immunologic Hallmarks of Salivary Cancers- *Luc G.T. Morris, MD, MSc*

Secretory Carcinoma Gene Fusions and Therapeutic Targets - *Raja Seethala, MD*

Therapeutic Implications of NOTCH Mutations in Salivary Gland Cancer - *Renata Ferraroto, MD*

This session will use a case-based format to discuss novel salivary gland biomarkers and how these alterations may affect diagnosis, prognosis, and treatment options.

At the conclusion of this session, participants will be able to:

- Demonstrate an understanding of the rare and diverse nature of salivary gland cancers, with specific appreciation of novel changes identified in the DNA.
- Describe treatment options for complex patients with salivary gland cancer.
- Compare diagnostic and therapeutic differences between specific salivary gland cancer subtypes.

4:05 pm – 5:00 pm **301/ 302**

Scientific Session 11 – Biomarkers

Moderators: Kevin Emerick, MD & Matt Spector, MD

AHNS-086: USE OF MACHINE LEARNING TO DEVELOP A CLINICAL PREDICTION MODEL FOR SURVIVAL IN ORAL CANCER
Omar Karadaghy, MD, Matt Shew, Jacob New, Andres Bur; University of Kansas Medical Center

AHNS-087: TMEM16A IS A POTENTIAL BIOMARKER FOR THE DEVELOPMENT AND MALIGNANT TRANSFORMATION OF SQUAMOUS EPITHELIAL DYSPLASIA
Hannah L Schwarzbach[1], Silvia Cruz-Rangel, PhD[2], Aaron Berg, MD[3], Umamaheswar Duvvuri, MD, PhD[2]; [1]University of Pittsburgh School of Medicine, [2]Department of Otolaryngology Head and Neck Surgery, University of Pittsburgh Medical Center, [3]Department of Pathology, University of Pittsburgh Medical Center

AHNS-088: DNA SEQUENCING OF HUMAN CANCER GENES AND HUMAN PAPILLOMAVIRUS GENOMES TO CLASSIFY AND MONITOR HEAD AND NECK SQUAMOUS CARCINOMA
Michelle Tanner, Erin Mamuyac, Eugenie Du, Samip Patel, Jared Weiss, Mark Weissler, Trevor Hackman, Gaorav Gupta, Jose Zevallos, Sandy Elmore, Renee Betancourt, Leigh Thorne, Margaret Gulley; University of North Carolina

AHNS-089: P16 AND HUMAN PAPILLOMAVIRUS IN SINONASAL CARCINOMA
Erin R Cohen, MD, Caitlin Coviello, BS, Simon Menaker, BS, Ernesto Martinez Duarte, MD, Carmen Gomez, MD, Kaming Lo, MPH, Darcy Kerr, MD, Elizabeth J Franzmann, MD, Jason Leibowitz, MD, Zoukaa B Sargi, MD, MPH; University of Miami Miller School of Medicine

AHNS-090: GROSS TUMOR VOLUME AND INVASIVE TUMOR VOLUME USING 3 TESLA MRI AS PREDICTORS OF CERVICAL LYMPH NODE METASTASIS AND SURVIVAL IN ORAL TONGUE CANCER
Rachad Mhawej, MD[1], Rebecca Cornelius, MD[2], Teresa A Smith[2], Kattia F Moreno Giraldo, MD[2], Yash J Patil, MD, MPH[2]; [1]University of Oklahoma Health Sciences Center, [2]University of Cincinnati

AHNS-091: ROLE OF LYMPHOSCINTIGRAPHY AND SPECT-CT IN SENTINEL LYMPH NODE DETECTION IN EARLY STAGE SQUAMOUS CELL CARCINOMA OF ORAL CAVITY : OUR EXPERIENCE
Jaimanti Bakshi, Professor, Ramya Rathod, MD, Resident, Naresh K Panda, Professor Head Otolaryngology, HNS, Roshan K Verma, Professor, MD, Anish Bhattacharya, Professor, MD, Amanjit Bal, Professor, MD; PGIMER, Chandigarh, India

AHNS-092: TUMOR INFILTRATING LYMPHOCYTES PREDICT PROGNOSIS IN HEAD AND NECK SQUAMOUS CARCINOMA
M E Spector, MD, E Bellile, L Amlani, J Smith, J Chad Brenner, L Rozek, A Nguyen, D Thomas, J McHugh, J Taylor, GT Wolf, MD; University of Michigan

AHNS-093: SENTINEL LYMPH NODE BIOPSY USING PREOPERATIVE CT LYMPHOGRAPHY AND INTRAOPERATIVE INDOCYANINE GREEN FLUORESCENCE IMAGING IN PATIENTS WITH EARLY TONGUE CANCER
Kohei Honda[1], Koichi Ishiyama[2], Shinsuke Suzuki[3], Yohei Kawasaki[3], Arata Horii[1]; [1]Department of Otolaryngology Head and Neck Surgery, Niigata University Graduate School of Medical and Dental Sciences, [2]Department of Radiology, Akita University Graduate School of Medicine, [3]Department of Otorhinolaryngology Head and Neck Surgery, Akita University Graduate School of Medicine

4:15 pm – 5:00 pm **Grand 6**

Debate: Controversies in Endocrine Surgery: Are We Operating Too Much?

Debate I: Active Surveillance v. Surgery for Papillary Microcarcinoma - *Louise Davies, MD, MS v. Catherine Sinclair, MD, FRACS*

Moderator: *Joseph Scharpf, MD*

Rebuttals, Questions and Answers

Debate II: Active Surveillance v. Surgery for Normocalcemic Primary Hyperparathyroidism - *Maisie Shindo, MD v. David Steward, MD*

Moderator: *Ralph P. Tufano, MD, MBA*

Rebuttals, Questions and Answers

Debates will be complemented with illustrative cases to examine the evidence-based decision making of surgical or medical management for incidental thyroid cancer and normocalcemic primary hyperparathyroidism.

At the conclusion of this session, participants will be able to:

- Recognize the option for active surveillance inselected patients with papillary microcarcinoma.

SCIENTIFIC PROGRAM

- Implement a team management strategy to manage patients with primary normocalceima hyperparathyroidism.

4:05 pm – 4:10 pm **Grand 5**

Best of Mucosal HPV-Negative Abstracts

Moderator: Joseph Califano, MD

AHNS-094: EVALUATING COMPLIANCE WITH PROCESS-RELATED QUALITY METRICS AND SURVIVAL IN ORAL CAVITY SQUAMOUS CELL CARCINOMA: A MULTI-INSTITUTIONAL ORAL CAVITY COLLABORATION STUDY
Sara W Liu, MD[1], Neil M Woody, MD[1], Wei Wei[1], Swathi Appachi, MD[1], C J Tsai[2], A I Ghanem, MD[3], Brian Matia[1], N P Joshi, MD[1], J L Geiger, MD[1], Jamie Ku, MD[1], Brian B Burkey, MD[1], Joseph Scharpf, MD[1], J J Caudell, MD[4], N E Dunlap, MD[5], D J Adelstein, MD[1], S Porceddu, MD[6], F Siddiqui, MD[3], N Lee, MD[2], S Koyfman, MD[1], Eric D Lamarre, MD[1]; [1]Cleveland Clinic, [2]Memorial Sloan Kettering Cancer Center, [3]Henry Ford Health System, [4]H Lee Moffitt Cancer Center and Research Institute, [5]University of Louisville School of Medicine, [6]Princess Alexandra Hospital/University of Queensland

4:10 pm – 5:00 pm **Grand 5**

Debate: Optimal 1st Line Management for HPV-related Oropharynx Cancer

Moderator: Joseph Califano, MD

Primary Surgery v. Primary Radiotherapy
Harry Quon, MD, Eric Moore, MD &
Heather Starmer, MA CCC-SLP v. Tom Galloway, MD, J. Scott Magnuson, MD & Katherine Hutcheson, PhD

Rebuttals, Questions and Answers

The optimal first-line treatment for HPV-related oropharynx cancer will be debated by multidisciplinary teams. Several illustrative cases will be presented with surgical and non-surgical teams facing off to present the best level evidence to support their position.

At the conclusion of this session, participants will be able to:

- Identify the optimal patients for upfront surgical and non-surgical approaches.
- Discuss the relative benefits and disadvantages of surgical and non-surgical approaches to HPV-associated oropharynx cancer..
- Recognize the importance of a multi-disciplinary approach to patients with HPV-associated oropharynx cancer to individualize treatment options and optimize outcomes.

5:30 pm – 6:00 pm **Griffin Hall**

Quickshot Oral Presentations in Poster Hall

Moderators: Marietta Tan, MD & Allen Ho, MD

AHNS-QS-096: FACTORS AFFECTING TREATMENT CHARGES FOR HEAD AND NECK CANCER
John Pang, MD, Kayva Crawford, Celia Ramsey, Joseph Califano, MD; University of California - San Diego

AHNS-QS-097: IDENTIFICATION OF ANTIGENS FOR A MULTIVALENT VACCINE FOR HEAD AND NECK SQUAMOUS CELL CARCINOMA
Harrison A Cash, MD[1], Jeffrey Houlton, MD[1], Laura Riolobos, PhD[2], Mary L Dises, MD[2]; [1]University of Washington, Department of Otolaryngology, [2]University of Washington, Cancer Vaccine Institute

AHNS-QS-098: PALLIATIVE QUAD SHOT RADIOTHERAPY IN ADVANCED HEAD AND NECK CANCER (HNC) - IMPACT ON SYMPTOMATIC RELIEF AND QUALITY OF LIFE
Subhash Chander, MD, Ravi Kanodia, Suman Bhasker, MD, Ritesh Kumar, A Biswas, H Verma; All India Institute of Medical Sciences, New Delhi

AHNS-QS-099: HOSPITAL MARKUP AND HEAD AND NECK CANCER SURGERY OUTCOMES IN THE UNITED STATES
Warren C Swegal, MD[1], Peter Vosler, MDPhD[1], Carole Fakhry, MD, MPH[1], David W Eisele, MD[1], Kevin D Frick, PhD[2], Christine G Gourin, MD[1]; [1]Johns Hopkins Medicine, [2]Johns Hopkins Carey Business School

AHNS-QS-100: FACTORS PREDICTIVE OF 90-DAY MORTALITY AFTER SURGICAL RESECTION FOR ORAL CAVITY CANCER: DEVELOPMENT OF A RECURSIVE PARTITIONING ANALYSIS FOR RISK STRATIFICATION
Ashwin Shinde, MD[1], Bernard L Jones, PhD[2], Richard Li, MD[1], Scott Glaser, MD[1], Sana Karam, MD, PhD[2], Erminia Massarelli, MD, PhD[1], Morganna L Freeman, DO[1], Thomas J Gernon[1], Ellie Maghami, MD[1], Robert Kang, MD[1], Zachary S Zumsteg, MD[3], Arya Amini, MD[1]; [1]City of Hope National Medical Center, [2]University of Colorado School of Medicine, [3]Cedars-Sinai Medical Center

AHNS-QS-101: PREOPERATIVE RISK INDEX FOR PATIENTS UNDERGOING HEAD AND NECK CANCER SURGERY
Marco A Mascarella, MD, MSc, Keith Richardson, MD, MSc, Nader Sadeghi, MD, MSc, Nancy Mayo, PhD; McGill University

AHNS-QS-102: ASSOCIATION OF FRAILTY WITH OUTCOMES AFTER LOW-RISK AND HIGH-RISK HEAD AND NECK CANCER SURGERY
Alexander N Goel, BA, Govind Raghavan, BA, Jennifer L Long, MD, PhD; University of California- Los Angeles

AHNS-QS-103: VERACYTE/AFIRMA GEC SUSPICIOUS FOR MALIGNANCY DIAGNOSIS VS. ACADEMIC TERTIARY CARE CENTER BENIGN THYROID CYTOLOGY RESULT. WHAT'S THE RISK OF MALIGNANCY??
Rohit Ranganath, MD[1], Derek Allison, MD[1], Vaninder K Dhillon, MD[1], Jonathon O Russell, MD[1], Erin A Felger, MD[2], Syed Z Ali[1], Ralph P Tufano, MD[1]; [1]Johns Hopkins Hospital, [2]Medstar Health

AHNS-QS-104: SURVIVAL IMPACT OF TREATMENT-RELATED TIME INTERVALS IN NASOPHARYNGEAL CARCINOMA IN THE UNITED STATES
Tristan Tham, MD[1], Seung Jun Ahn, MS[2], Sewit Teckie, MD[3], Ansley Roche, MD[1], Caitlin Olson, MD[1], Douglas Frank, MD[1], Dennis Kraus, MD[1], Peter Costantino, MD[1]; [1]New York Head & Neck Institute, [2]Feinstein Institute of Medical Research, [3]Department of Radiation Oncology - Zucker School of Medicine at Hofstra/Northwell

SCIENTIFIC PROGRAM

AHNS-QS-105: CHARACTERISTICS OF CHRONIC OPIOID USE IN HEAD AND NECK CANCER PATIENTS UNDERGOING FREE FLAP SURGERY
Juliet Meir, MD, Kevin Keyes, BS, Kathryn Hitchcock, MD, PhD, Raja Sawhney, MD, Deepa Danan, MD, MBA, Carol Dirain, PhD, Ramzi Salloum, PhD, Amy Fullerton, SLP, Peter Dziegielewski, MD, Natalie Silver, MD, MS; University of Florida

6:00 pm – 7:00 pm **Griffin Hall**

Poster Discussion Tours and Reception in Poster Hall

Thank you to all our poster tour leaders! Join them in the poster hall as they lead discussions with all the poster presenters. Find an AHNS poster tour sign to join a group!

Faisal Ahmad, MD
Clint Allen, MD, BS
Ameya Asarkar, MD
Rizwan Aslam, DO
Brittany Barber, MD MSc FRCSC
Shethal Bearelly, MD, BA
Christopher Britt, MD
J. Kenneth Byrd, MD
Jeffson Chung, MD, FRCSC
Orly Coblens, MD, BS
Antoine Eskander, MD, ScM, FRCSC
Jay Ferrell, MD
Jonathan Giurintano, MD
Zhen Gooi, MD
Ryan Jackson, MD
Kiran Kakarala, MD
Alexandra Kejner, MD
Jamie Ku, MD, BS
Miriam Lango, MD
Ryan Li, MD
Michael Moore, MD
David Neskey, MD
Eleni Rettig, MD
Sarah Rohde, MD
Arun Sharma, MD, MS
Natalie Silver, MD, MS, BS
Vivian Wu, MD, MPH
Bin Zhang, MD

7:30 pm – 8:30 pm **Grand 2**

President's Reception

FACULTY LISTING

Nishant Agrawal, MD, FACS, The University of Chicago Medicine, Chicago, IL
Faisal I. Ahmad, MD, MD Anderson Cancer Center, Houston, TX
Clint T. Allen, MD, BS, Johns Hopkins School of Medicine and National Institutes of Health, Bethesda, MD
Ameya A. Asarkar, MD, LSU Health Sciences Center, Shreveport, LA
Rizwan Aslam, DO, Tulane University, New Orleans, LA
Brittany Barber, MD, MSc, FRCSC, University of Washington, Seattle, WA
Chris Barker, MD, Memorial Sloan Kettering Cancer Center, New York, NY
Beth Beadle, MD, PhD, Stanford University, Stanford, CA
Shethal Bearelly, MD, BA, University of Arizona, Tucson, AZ
Jonathan J. Beitler, MD, MBA, FACR, Winship Cancer Center of Emory University, Atlanta, GA
R. Bryan Bell, MD, DDS, FACS, Providence Cancer Center, Portland, OR
Carol R. Bradford, MD, University of Michigan Medical School, Ann Arbor, MI
Christopher Britt, MD, Loylola Medicine, Maywood, IL
Erin P. Buczek, MD, University of Alabama, Birmingham, AL
Barbara A. Burtness, MD, Yale University School of Medicine and Yale Cancer Center, New Haven, CT
Naifa Busaidy, MD, FACP, FACE, MD Anderson Cancer Center, Houston, TX
J. Kenneth Byrd, MD, Medical College of Georgia at Augusta University, Augusta, GA
Joseph A. Califano, MD, FACS, University of California at San Diego, San Diego, CA
Steven B. Cannady, MD, University of Pennslyvania, Philadelphia, PA
Ricardo L. Carrau, MD, The Ohio State University Medical Center, Columbus, OH
Steve S. Chang, MD, Henry Ford Health System, Detroit, MI
Pankaj Chaturvedi, MBBS, MS, Tata Memorial Hospital, Mumbai, India
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Andreas Dietz, MD, University of Leipzig, Leipzig, Germany
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Jose P. Zevallos, MD, MPH, Department of Otolaryngology/ Head and Neck Surgery, Washington University School of Medicine, St. Louis, MO
Bin Zhang, MD, Beijing Cancer Hospital, Peking University, Beijing, China

FACULTY, PRESENTER & PLANNING COMMITTEE DISCLOSURES

The following faculty & presenters provided information indicating they have a financial relationship with a proprietary entity producing health care goods or services, with the exemption of non-profit or government organizations and non-health care related companies. (Financial relationships can include such things as grants or research support, employee, consultant, major stockholder, member of speaker's bureau, etc.)

Name	Company	Role	Received	Meeting Role
Chris Barker	Amgen	Principal investigator for clinical trial supported by company.	Research	Faculty
	Elekta	Principal investigator for clinical trial supported by company.	Research	
	Merck	Principal investigator for clinical trial supported by company.	Research	
R. Bryan Bell	Medimmune	Research Support	Research	Program Service, Faculty
	Merck	Speaking/Teaching	Honoraria	
	Stryker	Consultant	Consultant Fees	
	BMS	Research	Research Funds	
	BMS	Speaking/Teaching	Honoraria	
Barbara Burtness	Adlai Norte	Advisory Committee	Uncompensated	Faculty
	Aduro	Advisory Committee	Consulting Fee	
	Alligator Biosciences	Advisory Committee	Honoraria	
	AstraZeneca	Advisory Committee	Honoraria	
	Bayer	Advisory Committee	Honoraria	
	Boehringer Ingelheim	Consultant	Honoraria	
	Bristol Myers Squibb	Consultant	Honoraria	
	CCO	Speaking/Teaching	Honoraria	
	Celgene	Advisory Committee	Honoraria	
	Celldex	Consultant	Uncompensated	
	Chemotherapy Advisor	Writer	Honoraria	
	Cue Biopharma	Advisory Committee	Honoraria	
	Genentech/Roche	Advisory Committee	Honoraria	
	IDDI	Data Safety Monitoring Committee for AZ/Medimmune trials	Honoraria	
	Merck	Consultant	Travel support in excess of $5000	
	Merck	Consultant	Consulting Fee	
	PER	Speaking/Teaching	Honoraria	
	Practice Update	Speaking/Teaching	Honoraria	
	Prime Oncology	Speaking/Teaching	Honoraria	
	TRM Oncology	Advisory Committee	Honoraria	
Steven Cannady	Biogen	Consultant	Consulting Fee	Program Service, Faculty
	Zimmer Biomet	Consultant	Consulting Fee	
Jason Chan	Intuitive Surgical Inc.	Consultant	Honoraria	Abstract Presenter
Ezra Cohen	AstraZeneca	Consultant	Consulting Fee	Faculty
	BMS	Consultant	Consulting Fee	
	Merck	Consultant	Consulting Fee	
	MSD	Consultant	Consulting Fee	
	pfizer	Consultant	Consulting Fee	
Renata Ferraroto	Ayala	Consultant	Advisory Board	Faculty
	Sanofi	Consultant	Advisory Board	
Robert Ferris	Amgen	Advisory Committee	Consulting Fee	Faculty
	Astra-Zeneca/MedImmune	Advisory Committee	consulting fee, clinical trial & research funding	
	Bain Capital Life Sciences	Consultant	Consulting Fee	
	Bristol-Myers Squibb	Advisory Committee	consulting fee, clinical trial & research funding	
	EMD Serono	Advisory Committee	Consulting Fee	
	Iovance Biotherapeutics, Inc	Consultant	Consulting Fee	
	Lilly	Advisory Committee	Consulting Fee	
	Merck	Advisory Committee	consulting fee & clinical trial	
	Oncorus, Inc	Advisory Committee	Consulting Fee	
	Ono Pharmaceutical Co. Ltd	Consultant	Consulting Fee	
	Pfizer	Advisory Committee	Consulting Fee	
	PPD	Advisory Committee	Consulting Fee	
	Regeneron Pharmaceuticals, Inc	Advisory Committee	Consulting Fee	
	Tesaro	Advisory Committee	Consulting fee & research funding	
	TTMS	Consultant	Consulting Fee	
	VentiRx Pharmaceuticals	research	research funding	

FACULTY, PRESENTER & PLANNING COMMITTEE DISCLOSURES

Steven Frank	Augmenix	Speaking/Teaching	Honoraria	Faculty
	C4 Imaging	Founder/CMO	Ownership Interest	
	ELEKTA	Principle Investigator	Research	
	Eli Lilly	Principle Investigator	Research	
	Hitachi	Advisory Committee	Research	
	Varian	Advisory Committee	Consulting Fee	
Tom Galloway	UpToDate Inc	Independent Contractor	Royalty	Faculty
	Varian Medical Systems	Speaking/Teaching	Honoraria	
Neil Gross	Intuitive	Consultant	Training	Program Service, Faculty
	PDS Biotechnology	Scientific Advisor Board	Consulting Fees	
	Regeneron	Consultant	Research Support	
Gaorav Gupta	Naveris	Advisory Committee	Ownership Interest	Abstract Presenter
Patrick Ha	Bayer Oncology	Advisory Committee	Consulting Fee	Program Service, Faculty
	Ethicon	Resident education preceptor	Educational funding for resident teaching	
	Loxo Oncology	Consultant	Honoraria	
	Loxo Oncology	Advisory Committee	Consulting Fee	
	Medtronic	Resident education preceptor	Educational funding for resident education	
	Stryker	Resident education preceptor	Educational funding for resident teaching	
Zain Husain	Merck	Merck funded investigator initiated clinical trial	Research	Faculty
Kate Hutcheson	MD Anderson Cancer Center	Grant Funding	Grant Funding	Abstract Presenter
	MedBridge	Speaking/Teaching	Speaker Fee	
	NIH/NCI	Grant Funding	Grant Funding	
	NIH/NIDCR	Grant Funding	Industry Supported Research	
	Patient Center Outcomes Research Institute	Grant Funding	Grant Funding	
Stephen Lai	Cardinal Health	Consultant	Honoraria	Program Service, Faculty
Kelly Malloy	UpToDate	Author of content	Royalty	Faculty
Brian Moore	Agenus	Consultant	Consulting Fee	Program Service, Faculty
Michael Moore	AO North America	Speaking/Teaching	Honoraria	Abstract Reviewer, Faculty
Jason Newman	Castle Biosciences, Inc.	Consultant	Consulting Fee	Abstract Presenter
	Just Right Surgical	Consultant	Consulting Fee	
	Medtronic, Inc.	Consultant	Consulting Fee	
Mihir Patel	Intuitive Surgical	Speaking/Teaching	Honoraria	Abstract Presenter
Jack Phan	Accuray	Advisory Committee	Honoraria	Faculty
James Rocco	celgene	Advisory Committee	Consulting Fee	Faculty
Tina Rodriguez	Acerta	(Spouse) Institutional Research Funding	Research	Faculty
	AstraZeneca	(Spouse) Institutional Research Funding	Research	
	AstraZeneca	Institutional Research Funding	Research	
	AstraZeneca (Spouse)	Advisory Committee	Consulting Fee	
	Bristol Myers Squibb	Institutional Research Funding	Research	
	Genentech	(Spouse) Institutional Research Funding	Research	
	Ignyta	Institutional Research Funding	Research	
	Incyte	(Spouse) Institutional Research Funding	Research	
	Merck	(Spouse) Institutional Research Funding	Research	
	Merck	Institutional Research Funding	Research	
	Merck (Spouse)	Advisory Committee	Consulting Fee	
	Pharmacyclics	(Spouse) Institutional Research Funding	Research	
	Portola	(Spouse) Institutional Research Funding	Research	
	Seattle Genetics	(Spouse) Institutional Research Funding	Research	
David Rosenthal	merck	Advisory Committee	Honoraria	Faculty
Eben Rosenthal	LICOR	Consultant	Consulting Fee	Faculty
William Ryan	Medtronic	Consultant	Consulting Fee	Faculty
	Olympus	Consultant	Consulting Fee	
	Ziteo	Consultant	Consulting Fee	
Nicole Schmidt	Astex Pharmaceuticals	Research Funding	Research Funds	Program Service

FACULTY, PRESENTER & PLANNING COMMITTEE DISCLOSURES

Tanguy Seiwert	Aduro	Advisory Committee	Honoraria	Faculty
	Astra Zeneca	Advisory Committee	Honoraria	
	Bayer	Advisory Committee	Honoraria	
	BMS	Advisory Committee	Honoraria	
	Innate	Advisory Committee	Honoraria	
	Loxo Oncology	Advisory Committee	Honoraria	
	Merck	Advisory Committee	Honoraria	
	Nanobiotix	Advisory Committee	Honoraria	
	Roche Diagnostics	Advisory Committee	Honoraria	
	SQZ Biotech	Advisory Committee	Honoraria	
Andrew Sikora	Advaxis	I am the PI for an FDA-funded clinical trial, for which Advaxis provides study drug.	Research	Faculty
Michael Singer	Medtronic	Consultant	Consultant Fees	Program Service, Faculty
Richard Smith	American Academy of Otolaryngology-head and Neck Surgery	Education Coordinator	Stipend	Faculty
Baran Sumer	OncoNano Medicine	Consultant	Consulting Fee	Abstract Presenter
Ralph Tufano	Hemostatix	Consultant	Consultant Fees	Program Service, Faculty
	Medtronic	Consultant	Consultant Fees	
Marilene Wang	Aveta Biomics	PI	Research Funding	Abstract Presenter
James Welsh	Aileron	Consultant	Consulting Fee	Abstract Presenter
	Nanobiotix	Research Collaboration	Industry Supported Research	
	Nanobiotix	Consultant	Consulting Fee	
	Alpine Immune Sciences	Advisory Committee	Honoraria	
	AstraZeneca Pharmaceuticals	Consultant	Consulting Fee	
	Bristol-Meyers Squibb	Research	Industry Supported Research	
	Merck & Co.	Advisory Committee	Consulting Fee	
Lori Wirth	Bayer	Speaking/Teaching	Honoraria	Faculty
	Eisai	Consultant	Consulting Fee	
	Loxo	Consultant	Consulting Fee	
	Merck	Consultant	Consulting Fee	
Gregory Wolf	Brooklyn Immunotherapeutics	Independent Contractor	Research	Faculty
	Merck	Advisory Committee	Honoraria	
	Regeneron/ Sanofi	Advisory Committee	Honoraria	
Mike Wong	Merck , EMD-SERONO, Pfizer, Regeneron	Advisory Committee	Consulting Fee	Faculty
Sue Yom	Bristol-Myers Squibb	PI	Clinical Trial Support	Program Service
	Genentech	PI	Clinical Trial Support	
	Merck	PI	Clinical Trial Support	
Mark Zafereo	GenePro Diagnostics	Principal Investigator for Industry-sponsored clinical trial for molecular genetic testing of thyroid nodules.	Research	Faculty
Adam Zanation	Johnson and johnson	Consultant	Consulting Fee	Faculty
	Medtronic	Consultant	Consulting Fee	
	Styker	Consultant	Consulting Fee	

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ORAL PAPERS

BEST OF ENDOCRINE ABSTRACTS

AHNS-001: LATERAL NECK ULTRASOUND FOR THYROID CANCER: COMPARISON OF QUALITY BETWEEN COMMUNITY AND HIGH-VOLUME TERTIARY CARE PRACTICE

Heera Govindarajan Venguidesvarane, BDS, Bo Chen, MD, Mark Zafereo, MD, Salmaan Ahmed, MD; The University of Texas MD Anderson Cancer Center

Background: In the evaluation of patients with papillary thyroid cancer (PTC), high definition ultrasound has the highest sensitivity and specificity to detect non-palpable nodal metastasis in the lateral and central compartments of the neck. The cervical lateral neck metastatic status influences the extent of surgery and may affect postoperative adjuvant radioactive iodine (RAI) scans and postoperative treatment decisions. Missed cervical lateral neck lymph node metastases may result in recurrent disease, need for additional surgery, and inappropriate use of RAI in the setting of radiographically apparent disease. The objective of this study was to assess the added value of a preoperative diagnostic high definition lateral neck ultrasound of patients with papillary thyroid cancer at a tertiary care center.

Methods: Patients who presented to the University of Texas MD Anderson Cancer Center (MDACC) from January 1st 2000 to December 31st 2015 with newly diagnosed PTC were retrospectively reviewed. Patients diagnosed with PTC elsewhere and who had outside diagnostic thyroid/neck ultrasound for PTC who sought further management at MDACC were included. The cervical nodal status of bilateral lateral necks (levels II - V) was ascertained from review of ultrasound reports and confirmed with FNA and surgery pathology reports. Statistical analyses were conducted to estimate the proportion of cases diagnosed with lateral neck disease based on outside ultrasound versus high definition ultrasound at MDACC.

Results: The study included 2015 patients with 4030 respective lateral necks. Median patient age was 47 (range 18-97 years) and 73% female. There were a total of 3817 lateral necks that were non-suspicious by outside ultrasound reports, and of these, 636 (16.7%) necks had ultrasonographically suspicious lymph nodes in the lateral neck identified on high definition ultrasound at MDACC. 517 necks underwent fine needle aspiration (FNA) to assess for metastatic disease, while 110 necks proceeded to surgery without FNA. Among these 627 necks with FNA cytopathology and/or surgical pathology, 292 necks (46%) were positive for metastatic disease. Overall, 292 lateral necks with metastatic disease (7.6%) were identified among 3817 lateral necks originally deemed non-suspicious on recent outside ultrasound.

Conclusion: We found significant differences in detection of lateral cervical nodal involvement on ultrasound between community and tertiary care settings. These results help to define the value of high definition and comprehensive neck ultrasound conducted at a tertiary care setting for early detection and effective management of metastatic lateral neck papillary carcinoma.

AHNS-002: THE ROLE OF POSTOPERATIVE STIMULATED SERUM THYROGLOBULIN MEASUREMENT FOR PREDICTING RECURRENCE IN PATIENTS WITH PAPILLARY THYROID CANCER: AN ANALYSIS INVOLVING 1,319 PATIENTS

Andre Ywata De Carvalho, MD, MBA, Hugo Fontain Kohler, MD, PHD, Renan Bezerra Lira, MD, PHD, Thiago Celestino Chulam, MD, PHD, Luiz Paulo Kowalski, MD, PHD; A.C.Camargo Cancer Center

Introduction: Measurement of postoperative stimulated serum thyroglobulin (s-tg) has the potential to predict persistence and recurrence of papillary thyroid carcinoma (PTC).

Aim: The objective of this study is to examine the impact of s-tg on subsequent disease-free status.

Materials and Methods: We included patients submitted to total thyroidectomy for PTC with postoperative s-tg measurement. Statistical analysis was performed using Stata 15. Descriptive statistics were performed for every variable and comparisons between groups used the t-test for continuous and the chi-square for binary variables. Survival analysis was performed by the Cox model and classification analysis using regression trees for definition of thyroglobulin cut point.

Results: We retrospectively analyzed 1,319 consecutive patients with PTC submitted to total thyroidectomy. There were 1,058 females (80.21 %) and 261 males (19.79 %). Age ranged from 9 to 84 years (mean, 43.49 years, SD 13.25 years). Central neck dissection was performed in 241 patients (18.27 %). All patients were submitted to radioiodine remnant ablation. Multifocal disease was present in 469 patients (35.56 %) and metastatic lymph nodes were diagnosed in 223 patients (6.91 %). Extrathyroidal extension was diagnosed in 264 patients (20.02 %). Stimulated thyroglobulin level ranged from values below 0.10 to 14,400 mg/dL. Due to its distribution format, a logarithmic transformation was used for data normalization. Time of follow-up ranged from 0.73 to 236.48 months (mean, 74.30 months, SD 42.78 months). Recurrence was diagnosed in 61 patients (4.62 %) with 53 cases of nodal recurrence, 6 cases of distant metastasis and two cases of synchronous distant and nodal recurrence. Stimulated thyroglobulin was a significant predictor of recurrence-free survival (HR: 1.323, 95 % CI: 1.202 - 1.445, $p<0.001$). In our series, a cut-off value of 18 was identified as the best for variable dichotomization. Patients with stimulated thyroglobulin above 18 had an HR of 11.148 (95 % CI: 6.278 - 18.470, $p<0.001$) compared to those below this level. Using a ROC curve approach, the cut-point is pushed back to 2.999. Using this cut-point, a HR significant difference is observed between the two groups (HR: 6.444, 95 % CI: 3.269 - 12.704, $p<0.001$).

Conclusions: Stimulated tg testing is a readily available tool with a high negative predictive value for future disease-free status. A low s-tg should be considered a favorable risk factor in patients with PTC.

SCIENTIFIC SESSION 1 – ENDOCRINE

AHNS-003: UTILIZING A HIGH-THROUGHPUT APPROACH TO IDENTIFY EFFECTIVE SYSTEMIC AGENTS FOR AGGRESSIVE THYROID CANCER VARIANTS

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Background: Despite the use of aggressive, multimodality treatment most anaplastic thyroid carcinoma (ATC) patients die within a year of diagnosis. Although the combination of BRAF and MEK inhibition has been recently approved for use in ATC, it remains effective in a minority of patients who ultimately develop drug resistance.

Objective: To identify effective systemic agents against

aggressive thyroid carcinoma (TC) variants.

Methods: Twelve short tandem repeat (STR) validated human TC-derived cell lines were used (ATC n=7, poorly differentiated (PDTC) n=1, papillary (PTC) n=4). All cell lines underwent comprehensive genomic characterization prior to drug testing. The details of the types and the mutational profiles of these cell lines are summarized in Table 1. High-throughput drug screens were performed using the NCI's Approved Oncology Set V (n=114) and a custom collection of FDA approved drugs, investigational agents and mechanistically annotated compounds (n=153). The effect of drugs on cell growth and survival was measured after 72 hours of drug exposure. To identify the most effective drugs, we selected individual agents with maximal growth inhibition at each dose level relative to wells examined on the day of treatment (top 25th percentile) and subsequently used non-parametric statistics to compare effect size with other drugs and controls. The concentration-response curves from biological replicates of different passage number were fitted using a non-linear regression analysis to a 4-parameter logistic equation and the AUC was calculated and used for the development of pharmacologic trees (Figure 1). Confirmatory testing was completed for the most effective drug classes which were then stratified by cell line type and genomic background.

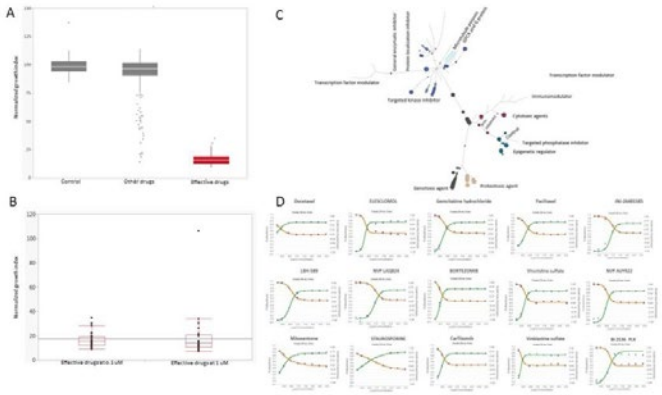
Results: We were able to identify the most effective compounds for each cell line. The most effective classes of agents against ATC cell lines were: antimetabolites, inducers of reactive of oxygen species (ROS), proteasome and microtubule inhibitors. These agent classes in addition to HDAC inhibitors achieved the highest effectiveness for PTC cell lines at 0.1μM dose level but only proteasome and microtubule inhibitors remained effective at 0.01μM dose level. TP53 mutational status impacted drug sensitivity; mutant TP53 cell lines demonstrated enhanced sensitivity to pralatrexate and vinca alkaloids, while wild-type TP53 cell lines demonstrated preferential sensitivity to HDAC inhibitors. Likewise, BRAF mutational status affected drug sensitivity with higher sensitivity to taxanes and protein kinase inhibitors in V600E mutation compared with preferential sensitivity to proteasome and HDAC inhibitors in wild-type. Confirmatory testing validated initial screening results.

Conclusion: High-throughput screening identified classes of systemic agents which demonstrate preferential effectiveness against aggressive TC variants, particularly those with mutant BRAF and TP53. These agents provide a basis for *in vivo* preclinical validation prior to clinical trial development.

Table 1. TC cell lines.

Cancer type	Cell line	BRAF	TP53	TERT promoter	Tumorigenic	Others	NSG sequencing/whole exome sequencing	Copy number analysis	RNAseq
PTC	TPC-1	WT	WT	-124	YES	RET/PTC1	MSK-IMPACT	MSK-IMPACT	
	K2	V600E	WT	-124	YES	PI3K_E542K	MSK-IMPACT	MSK-IMPACT	
	BCPAP	V600E	D259Y	-124	YES	PI3K_E545K	MSK-IMPACT	MSK-IMPACT	
	MDA-T85	V600E	WT	-124	YES	HRAS_Q61K	Sequenom/MSK-IMPACT	MSK-IMPACT	
PDTC	MDA-T192	WT	WT	-124	NO		Sequenom		
ATC	MDA-T178	WT	WT	WT	YES	HRAS_Q61R & EIF1AX_A113fs	Whole exome sequencing	CNV array	RNAseq
	Hth83	WT	Y236C & P153fs	-124	YES	HRAS_Q61R NRAS_Q61R & Ad11 copy gain	MSK-IMPACT	MSK-IMPACT	
	Hth7	WT	G245S	WT	YES		MSK-IMPACT	MSK-IMPACT	
	MDA-T187	V600E	K132N	-146	YES		Whole exome sequencing	CNV array	RNAseq
	SW1736	V600E	No expression, Q192*	-124	YES		Whole exome sequencing	CNV array	
	Hth104	V600E	No expression	-124	YES		MSK-IMPACT	MSK-IMPACT	
	8505C	V600E	R248G	-146	YES		Whole exome sequencing	CNV array	

Figure 1. Example of ATC cell line (MDA-T178) results. A) Boxplots of effective drugs in the initial screen compared with DMSO and other ineffective drugs; B) Selected drugs at a 0.1μM concentration with equivalent efficacy compared with 1μM dose; C) Drug tree analysis where the size of the colored dots represents relative effectiveness of each individual agent, and D) Confirmatory 8-dose drug response curves.



AHNS-004: MACHINE-LEARNING FOR THE GENETIC RISK STRATIFICATION OF THYROID NODULES BY ULTRASOUND

Kelly E Daniels, BS[1], Sriharsha Gummadi, MD[2], Ziyin Zhu, MD[3], Jena Patel, BS[4], Brian Swendseid, MD[4], Andrej Lyshchik, MD, PhD[2], Joseph M Curry, MD[4], Elizabeth E Cottrill, MD[4], John R Eisenbrey, PhD[2]; [1]Sidney Kimmel Medical College, Thomas Jefferson University, Philadelphia PA, [2]Department of Radiology, Thomas Jefferson University, Philadelphia, PA, [3]Department of Ultrasound, Beijing Friendship Hospital, Capital Medical University, Beijing, China, [4]Department of Otolaryngology, Thomas Jefferson University, Philadelphia PA

BACKGROUND: Thyroid nodules are present in approximately 80% of adult patients. Ultrasound is the gold standard for initial assessment of thyroid nodules, with follow-up fine-needle aspiration (FNA) for nodules with suspicious sonographic features. Subsequent cytology is risk stratified by the Bethesda System. Bethesda III and IV are considered indeterminate and a standardized approach to management of patients with this cytology is lacking. Analysis for high-risk genes has emerged as an option to guide treatment in such cases. Our institution uses an internally validated 23-gene panel to identify all mutations in known hotspot regions by next-generation sequencing (NGS). Nodules with known high-risk mutations are referred for surgery, while others may be watched with ultrasound surveillance. As machine-learning continues to strengthen, there is a growing role for augmented medical imaging. Machine learning may aid in the early recognition of lesions likely to be genetically high risk by ultrasound alone.

PURPOSE: This study aims to evaluate whether an automated machine-learning algorithm can be used to retrospectively genetically risk-stratify thyroid nodules by ultrasound, using the presence of a high-risk mutation by NGS as the reference standard.

METHODS: Electronic medical records were obtained retrospectively from 105 patients who underwent ultrasound-guided FNA and NGS (using a 23-gene panel) for suspicious thyroid nodules from January 2017 through August 2018. Nodules were classified as high risk if a mutation was identified in a codon of known pathogenicity and low risk if no mutation was identified or if a mutation was identified in a region of unknown pathogenicity. High quality ultrasound images of the nodules were selected from the day of or within 6 months prior to the FNA with the assistance of a board-certified radiologist blinded to the NGS results; 508 ultrasound images across 101 lesions and 91 patients were extracted.

361 images were of low-risk genotype lesions and 147 images were of high-risk genotype lesions. Images were pre-processed and cropped in a blinded fashion. Machine learning was performed on Google AutoML beta software (Google Inc, Mountain View, CA). Images were randomly assigned to a training set (410, 81.7%), an internal validation set (48, 9.4%) and a final testing set (50, 9.8%).

RESULTS: Evaluative analysis of the model by Google AutoML was performed on the test set of 50 images. The model produced a sensitivity of 88.9% and specificity of 95.1% in the identification of genetically high-risk lesions by ultrasound. Only one lesion that was high risk was misclassified as low-risk, and just two lesions that were low risk were misclassified as high risk. Of note, surgical pathology on the one misclassified high-risk lesion was follicular adenoma with oncocytic features. Positive and negative predictive values were 80% and 95%, respectively.

CONCLUSION: An automated machine learning classifier possesses the ability to discriminate sonographic images of thyroid nodules based on genotype risk. These preliminary results advocate for further exploration with greater control over technical and patient variables. Broad future directions include the potential for augmented image interpretation and feature extraction to identify additional high risk sonographic characteristics of thyroid nodules.

AHNS-005: EVALUATING THYROID CANCER INCIDENCE AND MINNESOTAN RESIDENTIAL RADON CONCENTRATION

Curtis Hanba, MD, Margaret Engelhardt, MD, Sobia Khaja, MD, Emiro Caicedo-Granados, MD; The University of Minnesota - Department of Otolaryngology

Objectives/Hypothesis: Radon is a potent carcinogen. One's risk of lung cancer rises nearly 16% for every 2.7 pCi/L increase in daily radon exposure. In 2009, the World Health Organization suggested corrective action to be taken in any home with measured concentrations above 4 pCi/L. Due to the thyroid's susceptibility to ionizing radiation, and radon's known carcinogenic properties, we aimed to evaluate the relationship between household radon concentration and thyroid cancer incidence in Minnesota.

Methods: A county by county compilation of data from The Minnesotan Department of Health's website was evaluated for thyroid cancer incidence (2009-2013), and household radon concentration (2010-2016). Linear regression evaluated factors contributing to thyroid cancer incidence with a cutoff for statistical significance set at $p = 0.05$.

Results: Radon concentrations were reported annually for an average of 19,198 homes for years 2010-2016. On average of 73.5% of homes returned radon concentrations above 2 pCi/L, and 44.1% of homes measured > 4 pCi/L. Minnesotan thyroid cancer incidence averaged 12.5 cases per 100,000. Linear regression analysis identified average radon concentration to significantly impact a county's incidence of thyroid cancer. (Incidence per 100,000 = 8.78 + 0.656x; 95% CI 0.116 – 1.197; R-20.064; $p = 0.018$)

Conclusion: Our analysis identified a significant correlation between household radon concentration and the incidence of thyroid cancer in Minnesota. This alarming trend may warrant further investigation regionally or nationally, and further inquiry into the carcinogenic potential of this ubiquitous gas should be pursued.

Key Words: Radon, Thyroid Cancer, Minnesota, Public Health, Papillary

AHNS-006: REFINING THE IDENTIFICATION OF A PRECISE CUT POINT FOR THE ASSOCIATION BETWEEN ANNUAL SURGEON TOTAL THYROIDECTOMY VOLUME AND COMPLICATIONS

Charles Metzer, MD[1], Michaela Hull, MS[2], John L Adams, PhD[2]; [1]The Permanente Medical Group, [2]Kaiser Permanente, Center for Effectiveness and Safety Research

Background: Higher surgeon volume for thyroid procedures is associated with improved clinical outcomes. Published definitions of high-volume surgeons vary widely. Previous estimates using regression modeling and generalized additive models (GAMs) may be inaccurate due to the clustering of cases within surgeons. In addition, little is known about the annual procedure volumes at which hypocalcemia, vocal cord paralysis (VCP), and hematoma start to decrease. The objective of this study was to control for physician-level effects and identify a precise cut point at which surgeon annual total thyroidectomy (TT) volume was associated with decreased 30-day complication rates for hypocalcemia, vocal cord paralysis, hematoma, and a composite measure that also included selected general complications of surgery.

Methods: We studied 10,546 TT procedures performed by 338 surgeons in the Northern and Southern California regions of Kaiser Permanente in 2008-2015. We used generalized additive mixed models (GAMMs), an extension of GAMs that allows for smoothing of volume-outcomes curves with splines and including random (physician-level) effects. Outcome measures were hypocalcemia, VCP, hematoma, and a composite outcome that included these complications and acute myocardial infarction, AMI, chyle fistula, neck swelling, surgical site infection, seroma, stridor, and UTI. Modeling was adjusted for gender, pregnancy, health care use in the year before surgery, region, surgery year, and selected comorbidities (thyroid cancer, dyspnea, cardiovascular disease, DxCG risk score, Charlson comorbidity index, and history of acute myocardial infarction, clotting disorder, dialysis, seizures, or stroke).

Results: The overall rate of the composite outcome was 13.4%, which began to decrease at 17.0 (95% CI, 10.5 - 23.6) TTs per year. 281 surgeons performing ≤ 16 TTs per year completed 5501 (52%) procedures with a 15.3%. complication rate. 61 surgeons performing ≥ 17 TTs per year completed 5045 (48%) procedures with a complication rate of 11.8%. Of 1438 complications, 841 (58.5%) followed TTs by lower volume surgeons. The overall rate of hypocalcemia was 6.0%, and it began to decrease at 17.8 (95% CI, 13.5 -22.8) TTs per year. 282 surgeons performing ≤ 17 TTs per year completed 5722 (54%) procedures with a hypocalcemia rate of 7.3%. 57 surgeons performing ≥ 18 TTs per year completed 4824 surgeries with a hypocalcemia rate of 4.4%. Of 632 instances of postoperative hypocalcemia, 418 (68.4%) followed TTs by lower volume surgeons. Rates of VCP and of hematoma both decreased at approximately 20 TTs per year but neither reached statistical significance.

Conclusions: Rates of a composite measure of 30-day complications began to decrease to a statistically significant degree when surgeons performed ≥ 17.0 TTs per year; 30-day hypocalcemia rates began to decrease when surgeons performed ≥ 17.8 TTs per year. No similar associations were observed for vocal cord paralysis and hematoma. To improve quality and patient safety, total thyroidectomies should be directed to surgeons who perform at least 17 of these procedures annually.

AHNS-007: THE USE AND IMPACT OF TECHNOLOGY IN THYROIDECTOMIES: A 2016 NSQIP ANALYSIS

Sina J Torabi, BA, Parsa P Salehi, MD, Fouad Chouairi, BS, Yan

ORAL PAPERS

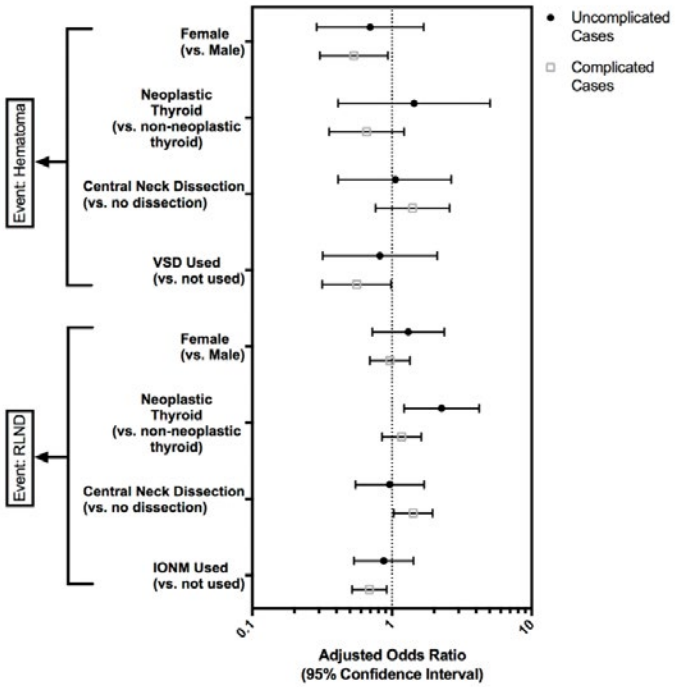
Lee, MD; Yale School of Medicine, Department of Surgery (Section of Otolaryngology)

Introduction: The benefit of intra-operative nerve monitoring (IONM) and vessel sealant devices (VSD) use in thyroidectomy procedures is highly controversial due to both the high costs and the lack of statistically significant data supporting their use. Using a large national cohort, we analyzed the utility of these technologies.

Method: We performed an analysis on the 2016 Thyroidectomy-targeted National Surgical Quality Improvement Project (NSQIP) Participant Use Data File. Uncomplicated and complicated cohorts were defined based upon surgical indication (uncomplicated: "single nodule or neoplasm/single nodule goiter"; complicated: all other indications). Using multivariate analyses adjusting for demographics and comorbidities, we examined the extent to which technology use (IONM or VSD) was associated with morbidities (recurrent laryngeal nerve damage [RLND] and hematoma), operation time (OT), and length of hospital stay (LOHS).

Results: Of the 5,871 patients identified, 5,312 (90.48%) were included in the IONM-specific analyses (uncomplicated: 1,946 [36.63%]; complicated: 3,366 [63.37%]), and 5,271 (89.78%) were included in the VSD-specific analyses (uncomplicated: 1,950 [36.99%]; complicated: 3,321 [63.01%]). As shown in FIgure 1, in uncomplicated cases, neither IONM nor VSD use had any effect on morbidity. In complicated cases, IONM use was associated with a decreased likelihood of RLN damage (aOR: 0.689; 95% CI: 0.518-0.916; p=0.010), while VSD use was associated with a decreased likelihood in POH formation (aOR: 0.559; 95% CI: 0.317-0.986; p=0.045). IONM significantly increased operation time in both uncomplicated (p<0.001) and complicated (p<0.001) cohorts; conversely multivariate analysis revealed that VSD decreased operation time in complicated cases by 6.42 minutes (95% CI: 1.1-11.73 minutes; p=0.018). Furthermore, IONM had no effect on post-operative hospital stay in multivariate analysis, while VSD decreased stay by 0.299 days (95% CI: 0.162-0.435 days; p<0.001) in complicated cases. Lastly, OTO-HNS use IONM more often than GS, while GS employ VSDs more frequently than OTO-HNS.

Conclusions: Our analysis demonstrates that in uncomplicated cases, neither IONM nor VSD result in a statistically significant benefit. They may also increase operation time, decreasing physician productivity, and increase healthcare costs. Hence, in uncomplicated cases, OTO-HNS may be overutilizing IONM, while GS may be overutilizing VSDs. In complicated cases, IONM seems to afford a protective effect against RLN damage; thus, its use may be considered in such settings. While the effect of VSDs on POH in complicated cases is less impactful, VSDs seem to decrease operation time and post-operative stay; hence, VSDs may provide financial benefit.



AHNS-008: BILATERAL NECK EXPLORATION VERSUS SPECT, SPECT/CT, OR 4DCT IMAGING IN NON-LOCALIZING PRIMARY HYPERPARATHYROIDISM—A COST-EFFECTIVENESS ANALYSIS.
Ethan Frank, MD[1], Shannon Fujimoto, BS[2], Pedro De Andrade, MD[1], Jared Inman, MD[1], Alfred Simental, MD[1]; [1]Department of Otolaryngology-Head & Neck Surgery, Loma Linda University Medical Center, [2]School of Medicine, Loma Linda University

Introduction: Most pathologic parathyroid glands will localize with neck ultrasound and/or Tc99m-sestamibi; however, a subset of patients will have non-localizing disease despite adequate initial imaging.[1] These patients require either bilateral neck exploration (BNE) or advanced imaging in hopes of identifying pathologic gland(s) and proceeding with unilateral neck exploration (UNE). Our institution has previously shown that outcomes from BNE without further imaging are comparable to those seen in surgery for localized disease; however, the cost-effectiveness of a BNE-first strategy compared to further imaging has not been evaluated.

Methods: A decision tree model was developed for the scenario of a patient with confirmed primary hyperparathyroidism and previously negative ultrasound and sestamibi scan. Financial data was extracted from the 2018 Center for Medicare Services (CMS) Fee Schedule, 2018 OSHPD Chargemaster document for Loma Linda University Medical Center (LLUMC), and internal reports of CMS allowed charges for procedure 60500 from the LLUMC billing department. Financial calculations were completed from the perspective of the insurance provider (CMS) based on allowed charges for the pertinent CPT codes. Operative outcomes were extracted from previously published institutional data.[2] Radiological data was drawn from recent meta-analyses of imaging in primary hyperparathyroidism.[3,4] One-way sensitivity analysis was conducted to model the effects of changes in cost or outcome variables.

Results: Based on institutional-specific outcomes, BNE cost $9475

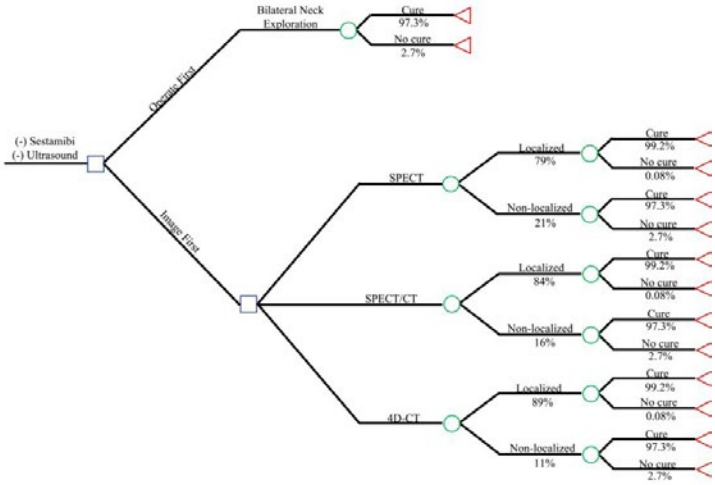
and had a success rate of 97.3%. SPECT had a total cost of $8667 with a success rate of 98.8%. SPECT/CT was modelled to have a total cost of $8634 and a 98.9% success rate. 4D-CT was projected to cost $8393 with a success rate of 99%. Incremental cost-effectiveness ratios (as compared to BNE) were -538.9, -525.9, and -636.8 ($/percent cure rate) for SPECT, SPECT/CT, and 4D-CT respectively. One-way sensitivity analyses (Figure 2) demonstrate the change in IECR and cut-off points (IECR=0) for four major variables.

Conclusion: In patients with non-localizing primary hyperparathyroidism, advanced imaging is associated with cost-savings compared to routine bilateral neck exploration. Increased cost-savings were predicted with increased imaging accuracy and decreased imaging costs. Increasing time for BNE or decreasing time for UNE were associated with increased cost savings. Limitations to this study include lack of radiologic accuracy data specific to the subpopulation of patients with non-localizing hyperparathyroidism and institutional variances in associated charges and clinical outcomes.

References:

1. Payne et al. Am J Otolaryngol. 2015;36(2):217-222.
2. Vuong et al. Head Neck. (In Press).
3. Cheung et al. Ann Surg Oncol. 2012;19:577-583.
4. Bunch et al. JAMA Otolaryngol Head Neck Surg. 2018;144(10):929-937.

Figure 1: Decision Tree



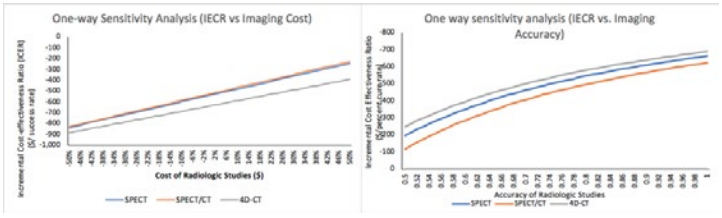


Figure 2: One-way Sensitivtiy Analysis Graphs for Cost and Accuracy of Radiologic Studies

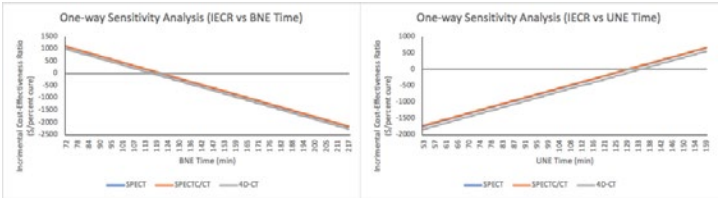


Figure 3: One-way sensitivity Analysis Graphs for Operative Time

AHNS-009: A PATHOLOGY PROTOCOL INCREASES LYMPH NODE YIELD IN NECK DISSECTION FOR ORAL CAVITY SQUAMOUS CELL CANCER

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Background: Multiple recent studies have demonstrated that the number of lymph nodes removed during neck dissection is an independent predictor of survival for oral cavity squamous cell cancer. There is increasing interest in using lymph node yield as a quality metric in head and neck surgery, however it is not well understood what factors influence the number of lymph nodes identified in surgical specimens.

Methods: Retrospective review including patients with oral cavity squamous cell carcinoma undergoing neck dissection between January 2016 and June 2018. Collected variables included age, gender, race, ethnicity, BMI, history of chemotherapy, neck radiation or surgery, smoking status, number of lymph node levels dissected, experience of assisting resident, assistance by a fellow, tumor subsite, high risk tumor features such as perineural invasion, and pathologist. The primary clinical endpoint was lymph node yield. A protocol to histologically evaluate adipose tissue in neck dissection specimens was initiated by the pathology department at our institution in December 2017. The impact of the pathology protocol and other variables on lymph node yield was assessed. Group comparisons of the total lymph node yield were performed using Kruskal Wallis or Mann-Whitney U-tests, as appropriate. A generalized linear model with a gamma distribution and log link function was used to further analyze the total lymph node yield while controlling for possible confounding variables that were selected based on a univariate p value of <.10.

Results: Multivariable analysis included 187 patients. The median lymph node yield was 25 (IQR=15-38.25). Utilization of the pathology protocol was associated with an increase in lymph node yield, with an effect ratio of 1.214 (95% CI: 1.041-1.415; p=0.013). Multivariable analysis additionally demonstrated positive associations between lymph node yield and number of dissected lymph node levels (p<0.001), presence of at least one positive lymph node (p=0.005), and BMI greater than 25 (p=0.006). Prior neck surgery (p=0.001), prior neck radiation (p<0.001), and age 65 or greater (p=0.047) were negatively associated with lymph node yield. Assistance by a fellow was included in the model based on univariate p value of 0.055 but was not statistically significant in multivariable analysis (p=0.414). The pathology protocol was not associated with an increased number of positive lymph nodes in univariate analysis (p=0.346). Other studied factors did not demonstrate significant associations with lymph node yield.

Conclusion: Lymph node yield in neck dissection is influenced by many factors related to patient characteristics, prior treatment history, and treatment factors including those pertaining to both

surgeon and pathologist. Many of these elements are not effectively captured in data from large database studies and should be considered in discussions of lymph node yield as a quality metric. Collaboration with the pathology department is essential to ensuring accuracy of specimen assessment and may independently increase lymph node yield in neck dissection.

BEST OF MUCOSAL HPV POSITIVE ABSTRACTS

AHNS-010: PLASMA CIRCULATING TUMOR HPV DNA FOR THE SURVEILLANCE OF CANCER RECURRENCE IN HPV-ASSOCIATED OROPHARYNGEAL CANCER

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Purpose/Objectives: To assess the performance of plasma circulating tumor HPV DNA (ctHPVDNA) testing to identify patients with disease recurrence during post-treatment surveillance in a cohort of patients with HPV-associated oropharyngeal squamous cell carcinoma (OPSCC).

Materials/Methods: A prospective biomarker trial was conducted in 89 patients with p16 positive OPSCC who had no evidence of distant metastatic disease at baseline. All patients received definitive chemoradiotherapy (CRT) with 78 receiving de-intensified CRT on clinical trial (60Gy). Remaining patients received standard CRT (70Gy). All patients had a 3 month post-CRT PET/CT and were thereafter followed with clinical examinations every 2 - 4 months for years 1 - 2, then every 6 months for years 3 - 5. Chest x-rays or chest CT's were performed every 6 months. Multianalyte droplet digital PCR assays were developed for ultra-sensitive detection of ctHPVDNA -16, -18, -31, -33, and -35 DNA on the Bio-Rad QX200 platform. Additional imaging was obtained if ctHPVDNA became detectable in the blood. Surveillance ctHPVDNA testing was initiated 4 months after completing CRT in patients who were clinically disease-free. Sensitivity, specificity, negative predictive value (NPV), and positive predictive value (PPV) of ctHPVDNA testing at detecting recurrence were calculated. Disease recurrence was defined as biopsy-proven relapse that occurred at least 4 months after completion of CRT.

Results: Clinical characteristics were the following: 89% T0-2, 79% N1, 15% N2, 80% never/≤ 10 pack years. Mean f/u was 20.2 months (range 6.4 – 40.6). Baseline ctHPVDNA was detectable in 51/58 (88%), with a median value of 582 copies/mL (range 8 - 22,579). All evaluable patients (n=57) had undetectable ctHPVDNA within 6 months of completing CRT. 70/89 patients (79%) in the surveillance cohort had undetectable ctHPVDNA at all timepoints during post-CRT surveillance. All 70 of these patients remain disease-free by clinical exam and radiographic imaging. 19/89 patients (21%) developed a positive ctHPVDNA test result with a median interval from CRT of 16.7 months (range 7.8 – 30.4) and a median value of 75 copies/mL (range 9 – 28,369). 8/19 patients who developed a positive ctHPVDNA test result during surveillance were diagnosed with recurrent disease (0 local, 1 regional, 3 regional and distant, and 4 distant). 11 patients developed detectable ctHPVDNA (range 23 – 28,369 copies/ml), with no evidence of disease recurrence on radiographic imaging. Four of these patients subsequently cleared their ctHPVDNA on a followup blood test, suggesting a possibility of immunological clearance. Sensitivity, specificity, NPV, and PPV of ctHPVDNA testing for detection of disease recurrence was: 100%, 90%, 100%, 53%.

Conclusions: Performance of an optimized multianalyte ctHPVDNA blood test to identify patients who remain cancer-free after curative-intent therapy was excellent (NPV = 100%). Future studies should be done to evaluate whether ctHPVDNA testing may improve early detection of cancer recurrence while also reducing costs by targeting radiographic surveillance to the subset of patients who are at greatest risk of relapse.

AHNS-011: DEVELOPMENT OF A NOVEL COMPOSITE PATHOLOGIC RISK-STRATIFICATION FOR SURGICALLY RESECTED HPV+ OROPHARYNGEAL CANCER

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IMPORTANCE: Human papillomavirus-associated (HPV+) oropharyngeal squamous cell carcinoma (OPSCC) is a distinct form of head and neck squamous cell carcinoma (HNSCC) requiring a unique staging system to accurately predict survival. However pathologic risk-stratification for HPV+ OPSCC largely remains based on the experience with HPV-unassociated (HPV-) HNSCC.

OBJECTIVES: We sought to compare the survival discrimination of the traditional pathologic risk-stratification system for HPV+ OPSCC and HPV- HNSCC. We then derived a novel pathologic risk-stratification system for HPV+ OPSCC to improve survival discrimination.

DESIGN, SETTING AND PARTICIPANTS: We identified 15,324 patients with nonmetastatic HNSCC treated with upfront primary surgery and neck dissection in the National Cancer Data Base from 2010-2013. We compared traditional pathologic risk-stratification for HPV+ OPSCC and HPV- HNSCC. We derived a novel pathologic risk-stratification system from Cox models to improve performance for HPV+ OPSCC that incorporated the composite score of pathologic adverse features.

MAIN OUTCOMES AND MEASURES: Survival discrimination of pathologic risk-stratification systems were measured with concordance indices.

RESULTS: Traditional pathologic risk-stratification results in wide separation of survival curves for HPV- HNSCC (5-year overall survival 76.2% for low-risk, 54.5% for intermediate-risk and 40.9% for high-risk) but not for HPV+ OPSCC (5-year overall survival 93.2% for low-risk, 88.9% for intermediate-risk and 83.7% for high-risk).

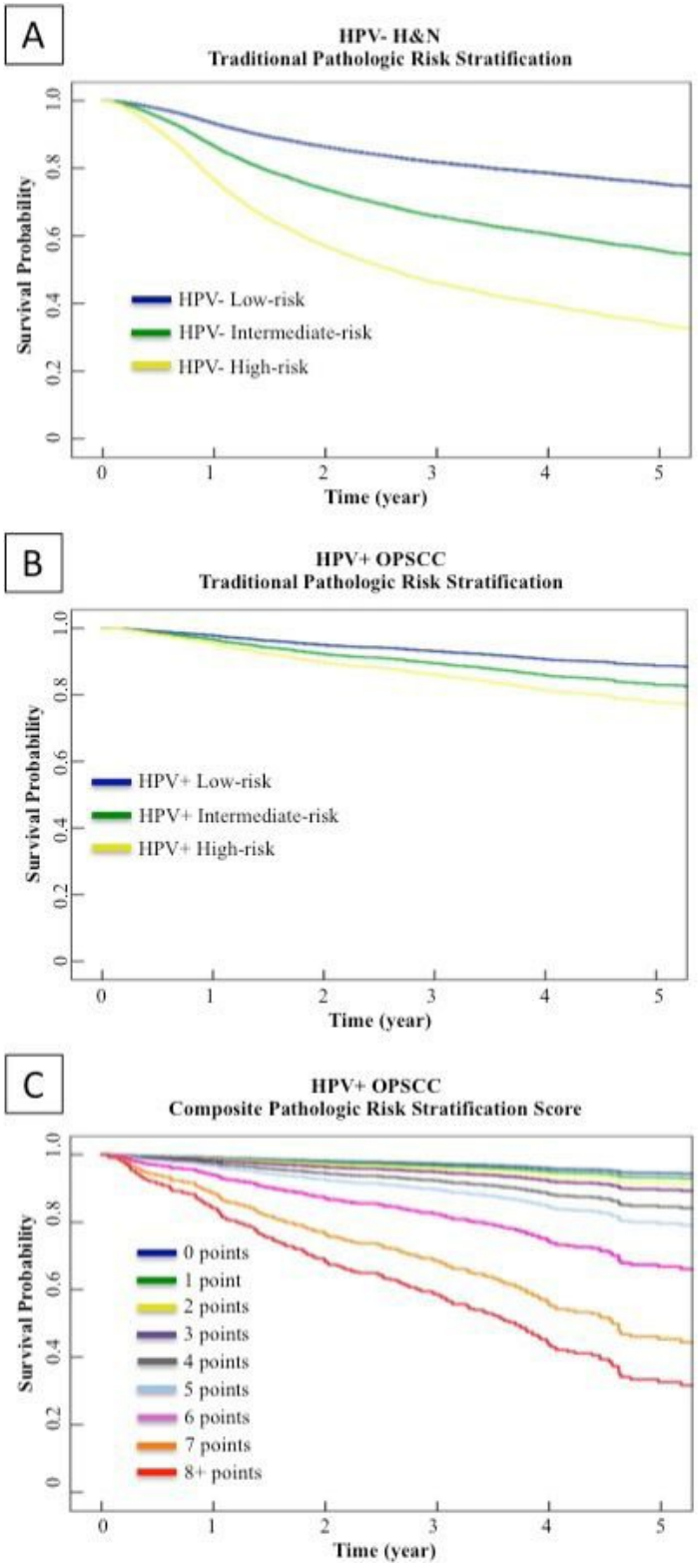
Survival discrimination with traditional pathologic risk-stratification was good for HPV- HNSCC with a concordance index of 0.68 but poor for HPV+ OPSCC with a concordance index of 0.58. We empirically derived a novel composite risk-stratification system for HPV+ OPSCC. Traditional pathologic features that were prognostic included T-stage, lymphovascular invasion, positive margins, number of pathologic lymph nodes, and degree of extranodal extension and these were assigned 1-3 points based on their empiric prognostic importance to derive a composite risk score. Composite risk-stratificaiton for HPV+ OPSCC improved survival dis-

crimination to a concordance index of 0.73 for total score and 0.67 when scores were grouped into three categories (5-year overall survival 91.8% for 0-3 points, 83.1% for 4-5 points and 53.2% for 6+ points). The new composite risk-stratification system resulted in substantial decrease in the proportion of HPV+ OPSCC classified as high-risk patients from 47.2% to 6.6%. Confirming the potential clinical applicability of this composite pathologic risk-stratification system, adjuvant treatment with radiation did not improve survival for patients with a low-risk composite risk-score (0-3) but did improve survival for patients with an intermediate- (4-5) or high-risk (6+) score. Adjuvant chemotherapy did not impact survival regardless of composite risk-score.

CONCLUSIONS AND RELEVANCE: Current pathologic risk-stratification suffers from poor survival discrimination in HPV+ OPSCC and misclassifies many patients with a favorable prognosis as high-risk. We derived a novel composite pathologic risk-stratification system for HPV+ OPSCC that improves survival discrimination.

Figure 1: Comparison of Overall Survival with Traditional Pathologic Risk-Stratification versus Composite Risk Stratification

Cox proportional hazard model of A: Traditional pathologic risk-stratification in HPV- HNSCC, B: Traditional pathologic risk-stratification in HPV+ OPSCC and C: Composite pathologic risk-stratification score in HPV+ OPSCC. Models adjusted for age, sex, race, comorbidities, adjuvant treatment, hospital and path risk-stratification.



ORAL PAPERS

SCIENTIFIC SESSION 2 – HPV NEGATIVE I

AHNS-012: RATE OF "SKIP METASTASES" TO LEVEL IV IN No ORAL CAVITY SQUAMOUS CELL CARCINOMA: A META-ANALYSIS AND REVIEW OF THE LITERATURE

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Background: The treatment of the negative neck (N0) in oral cavity squamous cell carcinoma (OCSCC) patients is an ongoing historical debate. Nowadays, an elective Neck dissection (END) is the treatment of choice regarding the neck in most cases of OCSCC, even in early stage (T1-2) disease. However, the extent of the END is still debateable. While most studies regard selective neck dissection (SND) of levels I-III as sufficient for the treatment of the negative neck (N0), others find it as inadequate due to occult skip metastasis to level IV. The aim of this study was to provide level I evidence on the rate of "skip metastases" to level IV in patients diagnosed with N0 OCSCC undergoing various types of END using a meta-analysis of all published studies.

Methods: A comprehensive search of online databases MEDLINE, EMBASE, Cochrane, Scopus and Google scholar for studies published between January 1 1970 and January 1 2018 was carried out. Studies that reported the rate of skip metastasis in patients with N0 OCSCC were included in the meta-analysis. Ninety-seven full-text articles were found eligible for analysis. Only studies that allowed the extraction of data on the rate of true skip metastasis (positive pathological level IV nodes with negative nodes in levels I-III, in clinically N0 patients) were included in the meta-analysis.

Results: Nine retrospective and two prospective studies with a total number of 1022 of patients that reported the rate of skip metastasis to level IV in N0 OCSCC patients met our stringent inclusion criteria. The result of the meta-analysis showed that the true rate of "skip metastases" to level IV in N0 OCSCC patients is extremely low and ranged from 0% to 4% (fixed effects model 0.0027 95% confidence interval [CI] =0.0000-0.0090). The rate of lymph node metastasis to level I, II and III in N0 OCSCC patients were as high as 30.2%, 26.6% and 15.8%, respectively. In a subgroup analysis, various T scores did not show differences in the rate of skip metastasis to level IV. Analysis according to the different oral cavity subsites revealed robust data only on oral tongue primaries. The rate of skip metastasis ranged from 0% to 1.9% (fixed effects model 0.0055 95% confidence interval [CI] =0.0000-0.0218).

Conclusion: The findings of this systematic review and meta-analysis indicated that the true rate of "skip metastases" to level IV in N0 OCSCC patients is extremely low. There is no justification to routinely dissect level IV while performing END for N0 OCSCC patients.

AHNS-013: NEUTROPHIL-TO-LYMPHOCYTE RATIO AS A PROGNOSTIC INDICATOR FOR OVERALL SURVIVAL IN SQUAMOUS CELL CARCINOMA OF THE HEAD AND NECK

Rocco M Ferrandino, MD, MSCR[1], Scott Roof, MD[1], Jonathan Garneau, MD[1], Yarah Haidar, MD[1], Susan Bates, MD[2], Yeun-Hee Anna Park, MD[2], Joshua M Bauml, MD[3], Eric M Genden, MD[1], Brett Miles, DDS, MD[1], Keith Sigel, MD, PhD[4]; [1]Department of Otolaryngology – Head and Neck Surgery, Mount Sinai Hospital, New York, NY, [2]Department of Medicine, Division of Hematology/Oncology, James J. Peters VA Medical Center, Bronx, NY, [3]Department of Medicine, Division of Hematology/Oncology, Perelman School of Medicine at the University of Pennsylvania, Philadelphia, PA, [4]Department of Medicine, Division of General Internal Medicine, Mount Sinai Hospital, New York, New York

Background

The prognostic value of systemic inflammatory markers is a growing area of interest in the field of oncology. Several studies posit that systemic inflammation may contribute to tumor growth, regeneration, and metastasis. Neutrophil/lymphocyte ratio is a known index of inflammation that has been associated poor prognosis in non-head and neck solid tumors. In this study, we sought to investigate the value of this metric in predicting survival in a national cohort of head and neck cancer patients in the United States.

Study Design

In this retrospective cohort study, we identified patients with head and neck squamous cell carcinoma using national Veterans Affairs data. Neutrophil/lymphocyte (N/L) ratios were calculated from complete blood counts measured in the 6 months prior to the date of cancer diagnosis and grouped into quartiles. Variables likely to impact overall survival in cancer patients, including primary cancer site, stage, tobacco/alcohol use, and comorbidity burden were collected. We compared overall survival using cox proportional hazards models with adjustment for these covariates. Ongoing analyses will investigate the prognostic value utilizing primary sites, stage, and treatment subgroups.

Results

The primary cohort consisted of 15,159 subjects of which 99% were male. Approximately, 81.1% of the cohort was white race, with an average age of 64 years old at the time of diagnosis. Nearly 61% of the patients were current smokers and 49% currently alcohol drinkers. Pharyngeal and laryngeal subsites were the most common, making up 41.6% and 38.6% of primary sites, respectively. After accounting for patient demographics, primary site, stage, and tobacco/alcohol use, we found an increased risk of death from any cause associated with increasing N/L ratio quartile (all quartiles $p<0.05$ compared to reference quartile). Patients with N/L ratios in the top quartile had an 80% increased risk of all-cause mortality compared to the lowest quartile (Hazard ratio 1.8; 95% confidence interval: 1.7-1.9; $P < 0.001$).

Conclusions

Elevated N/L ratio prior to cancer diagnosis confers a poor prognosis. In further analyses, we plan to elicit site, stage, and treatment specific risks associated with this inflammatory marker.

AHNS-014: MANAGEMENT OF EARLY GLOTTIC CANCER IN A VETERAN POPULATION: IMPACT OF RISK FACTORS ON DISEASE RECURRENCE AND TREATMENT SELECTION

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Background: Transoral laser microsurgery (TLM) is an alternative to external beam radiation (EBRT) in the treatment of early glottic cancers. Outcome data comparing these two modalities is sparse and mixed. Here we directly compare treatment outcomes in a

large cohort of patients treated within the Veterans Affairs (VA) system.

Objective: To evaluate survival outcomes in a cohort of early glottic cancers.

Study design: Retrospective review.

Methods: Patient demographics, tumor characteristics, treatment method, clinical and functional outcome data were collected and analyzed for 140 patients with T1 and T2 squamous cell carcinoma of the glottis treated at the Michael E. DeBakey VA Medical Center between 2000 and 2015.

Results: Treatment selection was compliant with current NCCN guidelines. Recurrence was noted in 20% of patients, mainly at the primary site (75%). Disease free and overall survival at 2 years were 85% and 75% respectively, with a mean follow up of 4.7 years. Twenty percent of patients had a diagnosed second malignancy and of those, half were active at time of last follow up. Among patients for whom cause of death was available at last follow up, none exhibited disease specific death.

A plurality (30%) of patients with a diagnosis of T1 glottic SCCA demonstrated findings of pre-malignant lesions either at a second site within the larynx at time of diagnostic biopsy or on biopsies obtained on another date during their clinic follow up; 42% of patients continued to smoke during and following treatment. Interim analysis of data from the first 70 (2005 to 2011) patients prompted a treatment shift toward TLM. For the second half of the cohort (2011 to 2015), implementation of TLM did not decrease locoregional control, disease specific survival or overall survival compared to radiation ($p>0.1$ for all 3 outcome measures).

Conclusions: Despite early T-stage at presentation, a high rate of local-regional recurrence was noted in Veterans with glottic cancer. Possible factors associated with this finding are field cancerization and a high rate of continued carcinogen exposure (during and following treatment). Treatment change to TLM was initiated due to the high rate of recurrence/second primary and was successful in maintaining locoregional control and survival while decreasing EBRT utilization.

AHNS-015: SYSTEMATIC REVIEW AND META-ANALYSIS OF ELECTIVE NECK DISSECTION FOR CN0 SALVAGE LARYNGECTOMY

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Background: Salvage total laryngectomy is indicated for locally advanced, recurrent laryngeal squamous cell carcinoma after undergoing initial organ preservation therapy. Elective neck dissection (END) with salvage laryngectomy remains controversial due to variability in outcomes with regards to occult nodal metastasis rates, survival, and postoperative complications. To further understand the role of END, we performed a systematic review and meta-analysis examining the occult nodal metastasis rate and postoperative complications following END for treatment of the clinical N0 neck in the salvage setting.

Methods: A PubMed search was conducted using the following Boolean operators: neck dissection OR nodal dissection AND salvage laryngectomy. Search was filtered for English language without limit on years searched. Additional sources were found by reviewing bibliographies of pertinent articles (2 of 17 articles). A systematic review and meta-analysis of the literature was performed using the PRISMA recommendations. Variables assessed included occult nodal metastasis, subsite/T stage of recurrence, regional recurrence, disease free survival, overall survival, and postoperative complications. For meta-analyses, data were pooled using random effects models due to heterogeneity for both occult nodal disease and post-operative complication measures.

Results: The initial search identified 120 articles, of which 17 met inclusion criteria. One study was from 1999 and all others ranged from 2005 through present. A total of 994 patients were identified: 830 patients underwent END and 164 patients were observed. Of the patients that underwent END, 30% were supraglottic, 61% were glottic, 8% were transglottic, and 1% were subglottic. Subsite information was missing for 228 patients (6 of 17 studies), while recurrent T (rT) stage data was absent for 379 patients (11 of 17 studies). Based on meta-analyses, the rate of occult metastasis in patients undergoing END was 14% (CI 95%=11-17%, $p<.01$). In subsite-specific analyses, occult nodal metastasis rates were 24% for supraglottic, 9% for glottic, 17% for transglottic, and 6% for subglottic tumors. Additionally, occult nodal metastasis was higher in rT3/4 tumors (21%) compared to rT1/2 tumors (10%). Review of these studies demonstrated regional recurrence within the END group from 0-8%, with no statistically significant survival difference reported between END and observation groups. However, when patients were stratified based on recurrent T stage, survival benefit was found in one study of rT3/4 patients undergoing END. In our meta-analysis, the relative risk of postoperative complications with END compared to observation was 1.62 (CI 95%=.87-3.03, $p=.13$). Complications included fistula, wound infection/dehiscence, chyle leak, hematoma, revision procedure, flap failure, and medical complications.

Conclusions: Outcomes following END in cN0 salvage laryngectomy patients are highly heterogeneous in the literature. Prior studies are compromised by heterogeneity in the analyzed patient cohort with variable proportions of supraglottic versus glottic/transglottic cohorts. Our meta-analysis reveals an overall occult nodal metastasis rate of 14%, with higher rates of occult nodes in supraglottic and transglottic subsites as well as T3/4 recurrent tumors. These data suggest strongly considering END in supraglottic/transglottic subsites and all T3/T4 recurrent tumors in the salvage setting. However, multidisciplinary tumor board review is critical in the decision making of each patient undergoing salvage therapy.

AHNS-016: CUMULATIVE SUPPRESSIVE INDEX AS A PREDICTOR OF RELAPSE FREE SURVIVAL AND OVERALL SURVIVAL IN HPV-ORAL SQUAMOUS CELL CARCINOMAS WITH NEGATIVE RESECTION MARGINS

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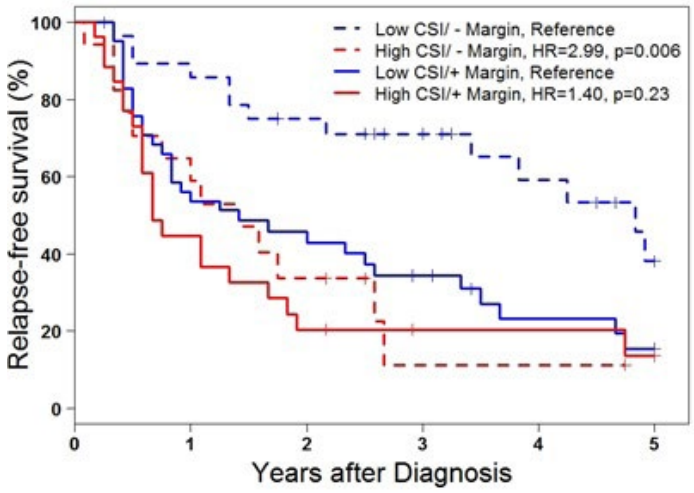
OR, [7]Providence Oral, Head and Neck Cancer Program and Clinic, Portland, OR

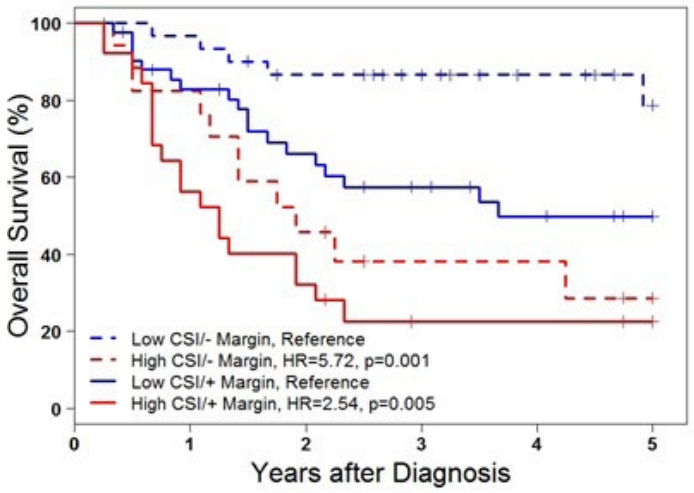
Head and neck cancer surgeons treating oral squamous cell carcinomas (OSCCs) are in agreement that local recurrence is more common and overall survival after surgery is worsened without sufficiently negative resection margins. However, the correlation of margin status to local recurrence is imperfect, with cases of adequate margins developing local recurrence, and cases of positive margins without local recurrence. Recent literature has indicated that immune response elements in the tumor microenvironment are a better prognostic marker than traditional histopathologic methods used in surgical margin assessment for several cancers.

Feng et al. analyzed the microspatial relationships in the tumor microenvironment of OSCCs for density of regulatory T cell (FoxP3+) as well as expression of immune suppressive molecules (PD-L1+). This team developed a cumulative suppressive index (CSI). A high CSI is indicative of a strong suppressive capability of the tumor microenvironment. Ultimately, the CSI has been shown to be a highly significant prognostic biomarker (P <0.0005) for overall survival in patients with HPV- OSCCs.

This subsequent study aimed to analyze the effects of both the CSI and the final margin status of the resection on relapse free survival and overall survival in patients with HPV- OSCCs. The hypothesis was two-fold: a low CSI would be a protective factor against recurrence in cases where the final margin status was positive, and conversely a high CSI is a risk factor for recurrence in cases with a negative margin. The CSI and margin status of 121 OSCCs were analyzed. A relapse free survival analysis was completed with a Cox proportional hazards regression. This analysis showed a higher CSI was significantly associated with higher rates of relapse (recurrence or death) for resections with negative margins [HR=2.74, 95% CI=(1.06, 7.11), p=0.04], while there is no significant association of CSI with RFS for positive or close margins [HR=0.76, 95% CI=(0.33, 1.74), p=0.51]. However, in patients with a positive margin, there was no statistical significance in the difference of rate of recurrence between high and low CSI. In an overall survival (OS) analysis, higher CSI was significantly associated with worse OS for negative margin [HR=4.93, 95% CI=(1.37, 17.78), p=0.01], while there is no significant association of CSI with OS for resections with a positive margin [HR=0.92, 95% CI=(0.34, 2.53), p=0.88].

The results of this study show that in OSCCs resected with negative margins, immune architecture analysis can augment our current histopathological risk assessment of the margin status and potentially guide adjuvant therapy. Further studies can elucidate the predictive value of CSI for the effectiveness of immunotherapies in resections with positive margins.





AHNS-017: SURGERY PROVIDES BETTER DISEASE-FREE SURVIVAL FOR EARLY GLOTTIC CANCER PATIENTS

Eunkyu Lee, MD, Nayeon Choi, MD, Eunhye Kim, RN, Young-Ik Son, MD, PhD; Samsung Medical Center, Seoul, Korea

Background: We reviewed the oncologic outcome of the patients who were treated at Samsung Medical Center for their early glottic cancer during the last 20 years.

Methods: Five hundred ten patients were included for this study, who were diagnosed as a T1N0 or T2N0 glottic squamous cell carcinoma and firstly treated at Samsung Medical Center, Seoul, Korea, since 1994. The patients were divided into two groups; surgery-based (OP) treatment and radiation-based treatment (RT). The clinical characteristics, disease-free survival (DFS) and overall survival (OS) were compared between the two groups.

Results: The age and gender distribution were not significantly different between the two groups. (P>0.05) Regarding T-stage, proportion of T1/T2 was 88.0%/12.0% and 76.5%/23.5% in the OP and RT group, respectively. Treatment failure was observed in

16% (n=40/250) of OP group and 26.9% (n=70/260) of RT group (P=0.034). Local recurrence was the most common pattern of failure for both OP and RT group (n=26/40, 65% and n=44/70, 63%). In Kaplan-Meier survival analysis, 5-year DFS rate was significantly better in OP group than RT group (P=0.049). However, 5-year OS rate was not different. In multivariate logistic regression analysis, treatment modality (OP vs. RT) was the only significant risk factor for the recurrence (P=0.035, HR=1.648)

Conclusion: Retrospective analysis of 510 early-stage (T1N0, T2N0) glottic cancer patients showed that surgery-based treatment provides better DFS than radiation-based treatment.

SCIENTIFIC SESSION 3 – RECONSTRUCTIVE ADVANCES I

AHNS-018: VALIDATION OF RISK-ADJUSTED PREDICTION MODELS USING THE SPECIALTY-SPECIFIC HEAD AND NECK RECONSTRUCTIVE SURGERY NSQIP

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Background: Patients undergoing head and neck oncologic surgery requiring flap reconstruction represent some of the most complex patients on a head and neck surgery service. In order to optimize their outcomes, one must establish risk-adjusted benchmarks to identify targetable areas of improvement. This study aims to construct risk-adjusted models from the specialty-specific Head and Neck Oncologic and Reconstructive Surgery NSQIP and to externally validate the models.

Methods: A prospective cohort of 1095 patients treated from 8/2012-10/2016 with head and neck oncologic and reconstructive surgery was used to create risk prediction models. Multivariable logistic regression was applied to create predictive models for 13 postoperative outcomes: (presence of fistula, ventilator dependence >48 hours, pneumonia, deep/superficial surgical site infection [SSI]); presence of gastrostomy-jejunostomy (GJ), nasoenteric (NE), or tracheostomy tube at 30 days postoperatively; conversion from NE to GJ tube; unplanned return to the operating room; and length of stay >7 days. Final models were externally validated using a separate cohort of 407 patients treated between 10/2016-12/2017. The concordance index (c-index) was used to evaluate the model performance in both the modelling and validation cohorts. The c-index estimates the probability of concordance between the observed complication outcomes and complication outcomes that are predicted from the models. The c-index ranges from 0 to 1, with 1 indicating perfect concordance, 0.5 indicating no better concordance than chance, and 0 indicating perfect discordance.

Results: Initial predictive models were best at predicting gastro-jejunostomy (GJ)-tube at 30 days (c-index=0.91) but least discriminative for predicting unplanned return to the operating room (c-index=0.59). Following external validation, the model for predicting ventilator dependence 48 hours post-op had a c-index of 0.45 compared to 0.63 with the initial modelling cohort. The c-index of the predictive model for pneumonia also decreased from 0.69 in the modelling cohort to 0.59 in the validation cohort, and from 0.75 to 0.68 for presence of tracheostomy tube at 30 days. The model for presence of GJ tube at 30 days retained its predictive ability with a c-index of 0.93 using the validation cohort. Predictive models for superficial SSI, unplanned return to the operating room, length of stay, presence of NE tube after 30 days, and conversion from NE to GJ tube continued to stable c-indices comparing the modelling and the validation cohorts. Models for predicting presence of fistula and deep SSI only consisted of one risk factor (pre-operative nutritional status and presence of tracheostomy tube, respectively) and there were very few events observed in the validation cohort, thus c-indices were changed from 0.58 to 0.54 and 0.69 to 0.58, respectively.

Conclusions and Relevance: Reliable and discriminant risk prediction models were able to be created for 13 perioperative complications incorporating oncologic- and specialty-specific variables in the Head and Neck Reconstructive Surgery Specific NSQIP. Models such as these are essential for risk stratification in patients undergoing head and neck oncologic surgery requiring flap reconstruction. Continued adjustment of the models can be completed as more patients and institutions are included in the modelling cohort.

AHNS-019: RECONSTRUCTION TECHNIQUE FOLLOWING TOTAL LARYNGECTOMY AFFECTS SWALLOWING OUTCOMES

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Introduction: Total laryngectomy reconstruction choice is driven by a variety of factors including defect size, location and history of radiation. How reconstruction affects functional outcomes, specifically swallowing, is unclear. This study seeks to determine whether reconstruction method is associated with differences in swallowing outcomes.

Methods: Retrospective review of patients undergoing total laryngectomy at a tertiary referral center. Reconstruction types included primary closure, pectoralis flap, anterolateral thigh (ALT) or radial forearm free flap (RFFF). Pharyngeal transit time (PTT), patient reported dysphagia (EAT-10) and diet tolerated (FOIS) were recorded and compared among patients undergoing primary closure and type of free tissue transfer using unpaired T-test for means and Chi-Square for categorical data.

Results: 95 patients met inclusion criteria. Forty-seven patients (49.5%) underwent total laryngectomy in the salvage setting. Primary closure was used in 36 patients (37.9%). Reconstruction with tissue transfer was used in 59 cases including ALT (N=33), RFFF (N=4), pectoralis major flap (N=18). There was no difference in EAT-10 scores between the two groups (p=0.498). There was a significant difference in FOIS level, with a higher proportion of patients achieving oral diet (FOIS > 3) with primary closure (p=0.01). Patients undergoing free flap reconstruction had significantly longer PTT compared to primary closure or pectoralis overlay (4.12 sec v 1.93 sec; p=0.009).

Conclusions: While free flap reconstruction is often necessary to prevent complications after total laryngectomy, when primary closure is achievable, these results suggest improved swallowing outcomes with better tolerance of oral diet and shorter pharyngeal transit times.

AHNS-020: FUNCTIONAL OUTCOMES OF COMPLEX MANDIBULAR RECONSTRUCTION WITH OSTEOCUTANEOUS FIBULA FREE FLAP WITH OR WITHOUT CAD/CAM-ASSISTED, VIRTUAL SURGICAL SIMULATION AND PLANNING: A RETROSPECTIVE ANALYSIS OF 246 CASES

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AIMS/OBJECTIVES: Osteocutaneous free fibula flap has become the mainstay for the reconstruction of complex oncologic mandibulectomy defects, although the surgery remains to be challenging, with many surgical fields often compromised by prior surgery and/or radiation therapy. Computer-aided design and manufacturing (CAD/CAM)-assisted virtual surgical planning (VSP) have allowed surgeons to attempt more accurate mandibular resections and reconstruction. We hypothesized that CAD/CAM-assisted VSP technique has resulted in improved long-term functional outcomes with reduced long-term complications compared to conventional free fibula flap mandible reconstruction.

MATERIALS/METHODS: A retrospective review was performed, to identify all patients undergoing free fibula flap mandibulectomy reconstruction from 2005 to 2016. Functional outcomes, including speech intelligibility, diet, gastrostomy-tube dependence, radiologic-evidence of bony union, and dental implantation were assessed at 6 months or beyond after surgery, as were the long-term plate-related complications and radiologic bony union outcomes.

RESULTS: We identified 246 consecutive mandibulectomy patients; 59 were reconstructed with the VSP technique whereas 187 were reconstructed with a free fibula flap designed in the conventional, intraoperative fashion. The mean follow-up time was 24 months. There was no significant difference in the patient characteristics, including demographics, comorbidities, prior treatment, and intraoperative characteristics, with one exception that VSP group had less active smokers (11.3% vs 23%; p=0.03). The majority of patients had excellent long-term speech intelligibility on a scale of 1-3 (1 is <50%, 2 is 50-80%, 3 is >80%), with 85% of patients scoring 3. The VSP group had better speech intelligibility (3.0±0.2 vs 2.8±0.5 where; p=0.005) compared to the conventional group. Majority of patients achieved normal or near-normal diet (35% with soft diet, 40% with regular/solid diet), with a gastrostomy-tube dependence rate of 17.6%. There were no difference in the type of diet (VSP vs conventional: 3.9% vs 8.4% NPO, 9.6% vs 15.7% liquid/puree, 30.8% vs 36.7% soft, 50.0% vs 37.3% regular/solid; p=0.148) or gastrostomy-tube dependence (11.9% vs 20.3%; p=0.148) between the two groups. VSP was associated with significantly fewer plate removals (3.4% vs 12.8%; p=0.048); plate fractures and exposures were similar between the two groups. There were no differences in the radiologic rate of nonunion/malunion (VSP 31.4% vs conventional 31.7%; p=0.916) or the rate of dental implantation (VSP 17.1% vs conventional 19.3%; p=0.692).

CONCLUSION: Compared to the conventional surgical technique, CAD/CAM-assisted mandibular reconstruction with the free fibula flap is associated with superior speech intelligibility and fewer complications resulting in plate removal.

AHNS-021: LONG-TERM SWALLOWING OUTCOMES AFTER SALVAGE LARYNGECTOMY, A COMPARISON BETWEEN RECONSTRUCTIVE TECHNIQUES.

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Objective: The impact of different closure techniques on long-term swallowing function after salvage laryngectomy has not been thoroughly reported in the literature. We sought to compare the functional outcomes of the most commonly used reconstructive approaches at 1- and 2-year postoperatively.

Design: Multi-institutional retrospective chart review.

Setting: Tertiary academic centers

Methods: Retrospective chart review of 306 patients from 15 participating institutions. All patients underwent salvage laryngectomy after treatment with definitive radiation or chemo-radiation therapy with curative intent, between January, 2011 and December, 2016. Only patients with either absent or limited pharyngectomy (i.e. candidates for primary closure) were included. Exclusion criteria were: extended pharyngectomy (< 5 cm of remaining posterior wall mucosa, semi-circumferential defects), >1cm of base of tongue resection, cutaneous involvement, and reirradiation following salvage surgery. All patients had a minimum follow up of 1 year. Information retrieved from the charts included: demographics, surgical data, pharyngeal closure technique, perioperative complications, flap outcomes and functional endpoints (oral diet, gastrostomy tube use, and speech rehabilitation) at 1- and 2- years postoperatively. Correlation between variables was analyzed through ?2 test, with statistical alpha set at 0.05.

Results: There were 251 (82%) males and 55 females (18%) with a mean age of 63.3 years (range 29-88). Concomitant chemotherapy was used in 182 (59.5%) patients. Salvage laryngectomy was performed for functional indication in 30 (9.8%) cases. In 121(39.8%) the procedure was associated with a limited pharyngectomy. A concomitant neck dissection and primary tracheoesophageal puncture were performed in 72.5%, and 25.2% of the cases respectively. The pharyngeal defect was closed with a free flap in 162 (52.9%), primary closure in 67 (21.9%), onlay myofascial pectoralis muscle in 46 (15%), pectoralis muscle with interposition skin paddle in 25 (8.2%), and other technique in 6 (1.9%). The radial forearm (n=84) and anterolateral thigh (n=75) were the most commonly used free flaps. Sixty-three patients (20.6%) presented with pharyngocutaneous fistula, and 21.9% required reoperation for any indication within 30 days of the procedure. The free flap survival rate was 97%. Forty-two patients (13.7%) presented with locoregional recurrence within the first year. At one year postop, 207 (67.6%) patients were on an unrestricted diet, 57 (18.6%) were had a gastrostomy tube, and 39 (12.7%) required at least one esophageal dilation. When comparing reconstructive techniques, free flap reconstruction was associated with a statistically significant reduction in pharyngocutaneous fistula (18.3% vs. 41.5% P=0.004), with no difference between the type of flap utilized. At 1-year postop there were no statistically significant differences within the groups in any of the measured endpoints (diet, gastrostomy tube use and need for dilation). At 2-years postop, the primary closure group (with or without pectoralis onlay flap) had a reduced need for gastrostomy tube use (3.4% vs 15%, P=0.043).

Conclusions: Free tissue transfer may reduce the rate of pharyngocutaneous fistula in patients undergoing salvage laryngectomy with minimal pharyngeal defects. In long-term follow up, reconstruction with non-radiated tissues does not

appear to confer functional advantages over alternative closure techniques.

AHNS-022: SPEECH AND SWALLOWING OUTCOMES AFTER LARYNGECTOMY FOR THE DYSFUNCTIONAL LARYNX

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Introduction: The adoption of radiation with or without chemotherapy has increased with the use of organ preservation protocols for advanced laryngeal cancer. The long term effects of radiation sequela are becoming more apparent, including tracheostomy dependence, recurrent aspiration pneumonia, impaired voice, and pharyngeal stricture. Laryngectomy is an established treatment for the dysfunctional larynx, but speech and swallowing outcomes for this indication are not well described, and there are few predictors of successful surgery for these patients. Thus, we sought to characterize outcomes for the largest cohort of subjects undergoing laryngectomy for the dysfunctional larynx to date and identify predictors for successful speech and swallowing outcomes.

Methods: A single institution retrospective case series was performed of all laryngectomy surgeries at the University of Michigan between January 2000 and October 2018. Subjects who underwent laryngectomy for a dysfunctional larynx after radiotherapy with or without chemotherapy were included. Patient demographics, tumor characteristics, surgery specifics, and postoperative outcomes were catalogued. Functional outcomes before and after laryngectomy were analyzed for subjects with at least one year of follow-up without recurrence of disease after surgery using Wilcoxon signed-rank tests. Bivariate analysis was performed with Fishers exact tests, with inclusion of variables with $p<0.10$ for subsequent regression analyses. Binomial logistic regression was performed to identify variables predicting swallowing outcomes at one year postoperatively. All statistical tests were two-tailed and conducted in SPSS version 25 with $p<0.05$ as a threshold for significance.

Results: A total of 43 subjects met inclusion criteria. Median time from radiation to laryngectomy was 3 years (range 0.5-27 years). A total of 28 subjects (65%) also had a history of chemotherapy. Reconstruction types included free tissue transfer (n=31, 72%), local flaps (n=6, 14%), or primary closure (n=6, 14%). Functional outcomes were analyzed for the 33 patients with one year follow-up. Preoperatively, 27 subjects (82%) required at least partial enteral tube feeding, as compared to 11 subjects (33%) one year postoperatively ($p=0.002$). At one year, 79% of subjects had achieved functional tracheoesophageal speech. There were 33% of patients who required at least one pharyngeal dilation for stricture at one year. For those subjects dilated, the first dilation occurred before 3 years, and 48% of the cohort were dilated over the study period. Binomial logistic regression revealed that free tissue transfer was associated with improved one-year postoperative functional voice ($p=0.05$, HR=16.1, 95% CI 1.0-254.0) as compared to locoregional flaps and primary closure. Free tissue transfer was also associated with improved one-year postoperative swallowing status ($p=0.01$).

Conclusions: We present functional outcome data that support laryngectomy as a robust option for treatment of the dysfunctional larynx after radiation therapy. Free tissue transfer was associated with improved voice and swallowing outcomes. Partial enteral tube feeding and/or pharyngeal dilations are still required after surgery for a significant proportion of patients however. As the prevalence of the dysfunctional larynx rises with organ preserving radiotherapy protocols, these data are critical for counseling patients about the risks and benefits of this procedure.

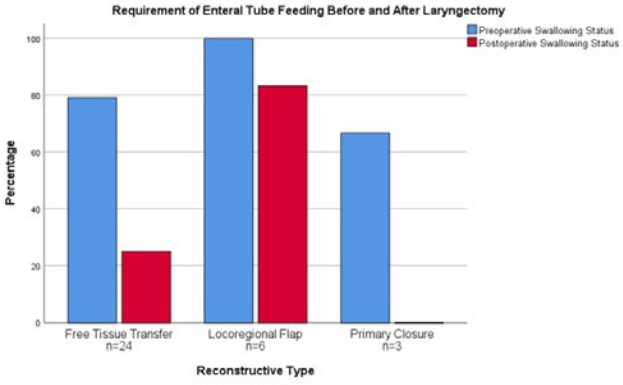

Figure 1. Requirement of enteral tube feeding before and after laryngectomy. Percentages of subjects by reconstructive type requiring at least partial enteral tube feeding preoperatively and at one year postoperatively.

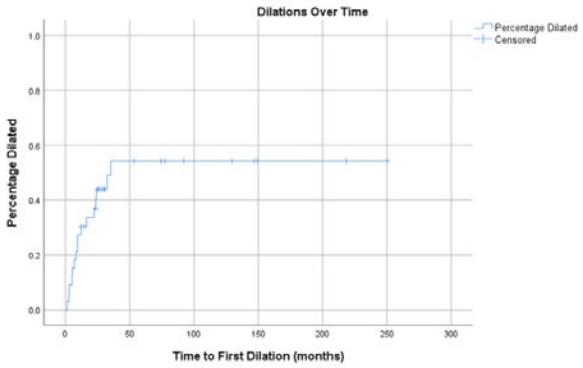

Figure 2. Dilations Over Time. Kaplan-Meier curve displaying the percentage of the cohort requiring pharyngeal dilation by months of follow-up. Time to first dilation for those subjects not dilated over the study period was defined as time to last follow-up or time to cancer recurrence.

AHNS-023: A PLAN OF THE DAY SIGNIFICANTLY REDUCES OPERATING ROOM TIME FOR HEAD AND NECK FREE FLAP RECONSTRUCTION

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Importance: Inefficiency in the operating room (OR) has a negative impact on the patient, hospital, and surgeon. Head and neck surgeries requiring microvascular reconstruction are complex, lengthy operations in which prolonged operative time is associated with higher complication rates and increased costs.

Objectives: Use Lean Methodology to identify potential operating

room efficiency improvement opportunities for head and neck surgical cases involving free tissue transfer.

Implement an intervention, the Free Flap Plan of the Day, and study the effects on operating room efficiency, costs, and complications.

Design:

Phase 1: In 2015, with the assistance of the Lean Promotion Office at our institution, we identified efficiency improvement opportunities for free flap reconstruction cases.

Phase 2: A single intervention, the Free Flap Plan of the Day was implemented 2/1/2016. A retrospective chart review of head and neck free flap reconstruction procedures performed from 2/1/2014 until 2/1/2018 was undertaken to analyze operating room times, cost, and complications. Mean operating room times and complication rates were compared using t-tests

Setting: Tertiary Academic Medical Center

Main outcomes and measures: In room to incision time and total operating room time.

Results:

Phase 1: Ten cases were observed by Lean specialists and a time study with process map was completed. Using this framework, major opportunities for decreasing intraoperative time waste were identified. Multiple communication breakdowns were seen to drive intraoperative time waste, therefore a Free Flap Plan of the Day was created to improve communication between team members.

Phase 2: Two hundred cases were included in the study. Cases were categorized into two groups: No Plan group (N=104) and Plan group (N=96) based on whether the Plan of the Day was utilized or not.

Mean In-room to incision time was 54.3 minutes (95% CI, 52.1-56.4 minutes) for the No Plan group and 47.2 minutes (95% CI, 44.6-49.6 minutes) for the Plan group (P < .001). Mean total operating room time was 524.1 minutes (95% CI, 501.2-546.9 minutes) for the No Plan group and 467.4 minutes (95% CI, 444.2-490.8 minutes) for the Plan group (P = .001).

Saving an average of 57 minutes of operating room time per case for the 96 cases in the intervention period resulted in potential additional operating room revenue of $672,000.

There were no significant differences between the groups with respect to complications including partial or complete flap loss, 30-day reoperations and readmissions, and mortality.

Conclusions: Lean methodology was used to identify efficiency improvement opportunities for head and neck free flap reconstruction procedures and design a focused intervention. A Free Flap Plan of the Day was used in this study to improve communication between the operating room team and was found to improve efficiency and reduce operating room times.

AHNS-024: POSTOPERATIVE MANAGEMENT OF MICROVASCULAR HEAD AND NECK FREE FLAPS IN A NON-INTENSIVE CARE UNIT SETTING

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Importance: Despite the widespread use of microvascular free flaps in head and neck surgery, there is limited data on the outcomes of initial management of these patients in a non-intensive care unit (non-ICU) setting with staff trained in free flap and airway management.

Objective: To evaluate the postoperative outcomes of patients transferred to a non-ICU versus an intensive care unit (ICU) following microvascular free flap reconstructive surgery of the head and neck.

Design: Retrospective Chart Review

Setting: Single tertiary care center

Participants: 280 consecutive patients who underwent a microvascular free flap reconstruction of the head and neck April 2016 to August 2018. The two comparative groups are patients receiving a microvascular free flap before and after June 2017 when the protocol was initiated.

Exposure: The implementation of a non-ICU free flap management protocol which allowed for admission to a dedicated head and neck unit with telemetry and staff trained in free flap and airway management for head and neck patients starting June 2017.

Main Outcomes and Measures: Hospital length of stay, unplanned readmission within 30 days, free flap failure, average number of ICU days.

Results: Vascularized free flaps were performed in 280 patients. There was no significant difference in patient age (p=0.436), sex (p=0.619), type of vascularized free flap (p=0.434), prior chemotherapy (p=0.244), prior radiation therapy (p=0.618), or comorbidities (p=0.914) between pre-intervention and post-intervention. There was no difference in complication rates between the two groups. There was no difference in free flap failure (p=0.303) between pre-intervention (7.1%, 10/140) and post-intervention (4.3%, 6/140). There was a trend towards shorter length of stay after the implementation of a non-ICU free flap unit that did not achieve significance (7.9±5.6 vs. 6.7±4.0, p=.074). The average number of ICU days (p<0.001) was significantly less in the post-intervention (0.54±1.128) than in the pre-intervention group (1.16±0.591). Implementation of this unit led to 104/140 patients avoiding direct admission to the ICU postoperatively for management. Of these 104 patients, only 3 required upgrade to ICU for during their hospitalization, all related to respiratory status. There was no difference in the rate of unplanned readmission within 30 days (p=0.354) between pre-intervention (10.0%, 14/140) and post-intervention (13.6%, 19/140).

Conclusions and Relevance: Patients undergoing microvascular free flap reconstruction of the head and neck can safely be transferred directly to an appropriate non-intensive care unit setting without an increase in free flap failure rates or unplanned readmissions within 30 days. The decrease in ICU utilization may lead to decreased overall length of stay and cost of care.

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SCIENTIFIC SESSION 4 – HPV POSITIVE

AHNS-025: PATHOLOGIC RESPONSE TO NEOADJUVANT CHEMOTHERAPY IN HPV POSITIVE OROPHARYNGEAL SQUAMOUS CELL CARCINOMA

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Background: A paradigm shift is gradually making way in the treatment of HPV positive oropharyngeal squamous cell carcinoma (OPSCC). Neoadjuvant chemotherapy followed by definitive surgery is currently being investigated for treatment naïve HPV positive OPSCC by our group. Feasibility of the approach is previously reported. The objective of this study is to ascertain the response to neoadjuvant chemotherapy in an expanded group of patients and the association of tumor volume reduction on imaging to predict pathologic response in such patients.

Methods: A prospective observational study of patients with loco-regionally advanced, non-metastatic, HPV positive, and treatment naive OPSCC enrolled in a clinical trial of neoadjuvant chemotherapy followed by surgery was performed. All patients underwent three cycles of induction chemotherapy (cisplatin/docetaxel); pre and post-chemotherapy imaging wereobtained. Receiver operating characteristic (ROC) curves and logistic regression analyses were used to assess the diagnostic utility of imaging in predicting the complete pathologic response (CR) at the primary and nodal sites.

Results: Of the 55 patients included in the study, 24 (43.6%) patients had a complete pathologic response following neoadjuvant chemotherapy at all sites. The CR rate at the primary and nodal sites were 70.1% (39 patients) and 56.4% (31 patients), respectively. An estimated volume reduction of the primary tumor at 90% cut-off predicted the complete pathologic response of the primary tumor with a sensitivity of 82% (95% CI 70.2-96.4), specificity of 73% (95% CI 56.6-88.7) and area under the curve (AUC) of 0.79 (95% CI 0.62-0.96). Metastatic lymph node volume reduction by 83% predicted the complete pathologic response of the nodal site with a sensitivity of 64% (95% CI 29.9-80.1), specificity of 76% (95% CI 35.7-98.7) and AUC 0.76 (95% CI 0.61-0.91). After adjusting for age, sex, and Charlson co-morbidity index, tumor volume reduction predicts complete pathologic response reasonably as the logistic odds ratio was 18.6 (95% CI= 2.99-191).

Conclusion: Patients with loco-regionally advanced HPV positive OPSCC show a goodresponse to neoadjuvant chemotherapy. Tumor volume reduction of 90% or more following induction chemotherapy predicts the complete pathologic response of the primary tumor. Neoadjuvant chemotherapy followed by definitive transoral robotic surgery and neck dissection is a new paradigm worthy of further investigation.

AHNS-026: PREDICTORS OF POSITIVE MARGINS AND COMPARISON OF POSITIVE MARGIN RATES BY SUBSITE, TUMOR STAGE, AND FACILITY TYPE IN OROPHARYNGEAL TUMORS TREATED WITH TRANS-ORAL ROBOTIC SURGERY (TORS)

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Objectives: To characterize patients receiving TORS for oropharyngeal tumors nationwide, compare the positive margin rate (PMR) among subsites, pathologic tumor stages, and facility types, and identify predictors of positive margins.

Methods: Retrospective review of the National Cancer Database (2010-2014). ?2 test was used to compare PMR between subgroups. Patient, tumor, and treatment factors were associated with positive margins via univariable and multivariable logistic regression All factors with $p<0.2$ for association with positive margins and all clinically-relevant factors were included in the multivariable model. T0 patients were excluded.

Results: 2,778 patients undergoing TORS were identified. Mean age was 59.5 years, 82.3% of patients were male, and 80.5% were treated at academic centers. 48.6% of tumors were HPV+ (34.1% unknown), 57.2% had a tonsil primary site, 39.3% base of tongue (BOT), 1.9% soft palate, and 1.5% other oropharynx. 86.9% of patients were T1/T2 and 10.3% were T3/T4. Overall PMR was 16.8%. PMR was significantly different in patients with higher T stage (pT1=13.4%, pT2=17.2%, pT3=28.3%, pT4A=42.1%, pT4B=58.3%; $p<0.001$). PMR was also higher in patients with BOT than tonsil primary site (19.4% vs 15.7%). Academic centers had a 15.7% PMR, as opposed to 25.2% for non-academic ($p<0.001$). Of demographic variables examined, age, insurance, and facility type were associated with margin status in univariable ($p<0.2$); the rest (sex, race, income, distance to facility) were excluded from the multivariable. On multivariable regression, high T stage was associated with increased positive margin rates (versus T1, T2: OR=1.53, CI=1.06 – 2.22; T3: 3.22 [1.88-5.52]; T4A: 5.25 [2.16-12.78]; T4B: 14.49 [2.50-83.92], $p<0.001$). Treatment at an academic facility was associated with decreased odds (0.58 (0.39-0.85), $p<0.01$). Demographics, extracapsular extension, lymph-vascular invasion, HPV status, subsite, and number of positive nodes were not associated with positive margin rates.

Conclusions: TORS is typically performed at academic centers for tonsil and BOT-based tumors. The overall PMR is 16.8%. 10% of patients undergoing TORS have T3 or T4 disease, and, when controlling for demographic and clinical factors, higher T stage was strongly associated with increased risk of positive margins, with T3 and T4 tumors having the highest odds. Furthermore, non-academic centers carry twice the odds of positive margins as compared to academic. Further research is needed to determine the efficacy of TORS in tumors with high T stages and to understand reasons for the disparity between academic and non-academic centers utilizing TORS.

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Table 1: *Multivariate analysis of factors associated with positive margin rates in TORS patients*

Factors	Odds Ratio (95% Confidence Interval)	P-value
Age	1.01 (0.99-1.04)	0.26
Insurance		0.18
Not Insured (reference)	-	
Private	0.34 (0.13-0.91)	
Medicaid	0.53 (0.17-1.63)	
Medicare	0.38 (0.13-1.11)	
Other Government	0.81 (0.17-3.99)	
Unknown	-	
Facility Type		0.005
Non-academic (reference)	-	
Academic	0.58 (0.39-0.85)	
HPV Status		0.11
Negative (reference)	-	
Positive	0.74 (0.52-1.07)	
Extracapsular Extension		0.41
Negative (reference)	-	
Positive	0.85 (0.59-1.24)	
Pathologic T-stage		<0.001
pT1 (reference)	-	
pT2	1.53 (1.06-2.22)	
pT3	3.22 (1.88-5.52)	
pT4A	5.25 (2.16-12.78)	
pT4B	14.49 (2.50-83.92)	
X	3.18 (0.69-14.61)	
Subsite		0.97
Tonsil (reference)	-	
Base of Tongue	1.08 (0.76-1.55)	
Soft Palate	-	
Other Oropharynx	0.87 (0.26-2.89)	
Number of Positive Lymph Nodes		0.07
0 (reference)		
1	-	
2	1.63 (0.95-2.80)	
3	1.34 (0.73-2.47)	
4	1.86 (0.94-3.68)	
5+	1.27 (0.51-3.16)	
	2.32 (1.33-4.05)	

AHNS-027: POST-TREATMENT CLINICAL SURVEILLANCE FOR HPV-ASSOCIATED OROPHARYNGEAL CANCER.

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Background: National Comprehensive Cancer Network (NCCN) guidelines recommend routine clinical follow-up as part of post-treatment surveillance for head and neck cancer (HNC) patients. Human papilloma virus-associated oropharyngeal cancer (HPV+OPC) is a unique subset of HNC, associated with less recurrence and improved survival. We sought to determine the utility of clinical surveillance for this cohort.

Methods: In this retrospective study of patients with HPV+OPC diagnosed between 2011–2014 at a large integrated healthcare system, we assessed whether adherence to NCCN guidelines and method of recurrence detection were associated with improved survival. Bivariate analyses were done with the Kaplan-Meier estimator and log-rank test; multivariable analyses were conducted using the Cox proportional hazards model, with patient adherence to NCCN visit guidelines as a time-dependent variable.

Results: Median follow-up time was 4.5 years (IQR: 3.8–5.6). Subjects demonstrated 83.0%, 52.7%, 73.4%, 62.3%, and 52.9% adherence to NCCN surveillance guidelines in years 1 through 5, respectively. A total of 3,358 clinical surveillance examinations were performed to detect recurrences in 10 symptomatic patients (4 with local/regional and 7 with distant recurrences) and 1 asymptomatic patient with a regional recurrence. Of the clinically detected recurrences, salvage was attempted in 6 patients (3 local resections, 2 neck dissections, and 1 metastatectomy). At the study end date, 1 was alive, 4 deceased, and 1 lost to follow-up. Surveillance imaging detected 11 additional recurrences. All loregional recurrences occurred within the first 2 years, and all salvageable recurrences occurred within the first year. No second primary cancers of the head and neck were identified. Of the total 22 patients having recurrence, 19 (86.4%) adhered to NCCN guidelines in the interval prior to diagnosis. Among patients having recurrence there was no survival advantage on Kaplan-Maier estimation with method of recurrence detection (p=0.300), adherence to NCCN guidelines (p=0.554), nor to being seen early for recurrence detection (p=0.609). Adherence to NCCN guidelines in the interval prior to recurrence diagnosis was not associated with mortality in the multivariable Cox model (referent: no adherence, HR 0.78, 95% CI 0.20–3.01). Of patients having recurrence, 16 (72.7%) died by the end of follow-up; median survival time after recurrence diagnosis was 2.6 years (IQR 1.7-3.9).

Conclusion: For HPV+OPC patients, clinical surveillance is exceptionally low yield. Nearly all clinically-detected recurrences were elicited by patient symptoms that prompted earlier presentation to the clinician. Adherence to the current schedule does not confer survival advantage and recurrences are almost never detected beyond two years. Our study provides support for a previously proposed de-escalated clinical surveillance schedule of every three months for the first six months, every six months until two years, and then annually thereafter.

AHNS-028: EVOLUTION OF POSTSURGICAL DYSPHAGIA AFTER TORS FOR OROPHARYNGEAL CANCER: A PROSPECTIVE REGISTRY ANALYSIS

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Importance: A major goal of primary transoral robotic surgery (TORS) for oropharyngeal cancer (OPC) is to improve swallowing by personalized treatment based on pathologic rather than clinical staging. Yet, the impact of TORS alone on swallowing outcomes are poorly characterized, particularly in relation to non-surgical options.

Objective: The aims of this paper were: 1) estimate rates of acute post-TORS dysphagia and recovery by 3-6 months; and 2) compare severity of acute and post-treatment swallowing outcomes after TORS to non-surgical treatment.

Design: Secondary analysis of prospective registry data.

Setting: Single academic institution experience.

Participants: 298 patients with HPV/P16+ T1-2 NX-2b and T3 N0 OPC (AJCC VII) were sampled from a prospective OPC registry.

Main Outcome Measures: Modified barium swallow (MBS) studies graded per DIGEST and multi-symptom MD Anderson Symptom Inventory-Head and Neck Module (MDASI-HN) questionnaires were collected pre, during, and post treatment at standard intervals. Among 82 patients who had primary TORS, repeated measures of DIGEST pre and post-TORS, and 3-6 months post-treatment were compared by omnibus then pairwise using nonparameteric tests. 3-6 month dysphagia grade (DIGEST) was compared between primary treatment modalities with multivariate adjustment. MDASI-HN questionnaires were collected weekly during RT regardless of surgery. To assess difference by treatment status at the time of RT, MDASI-HN swallow items (scale: 0-10) were compared at onset (week 1) and end of RT using multiple linear regression between groups: treatment naïve, post-induction, and post-TORS.

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Results: Among 82 patients in the surgical group, MBS DIGEST grade significantly worsened post-TORS ($p<0.001$): 12% had moderate (grade 2), and 7% severe (grade 3) acute post-TORS dysphagia (median 3.4 weeks postoperatively) prior to adjuvant treatment. At 3-6 months post TORS, dysphagia grades (DIGEST) improved ($p = 0.16$ relative to post-TORS MBS) but remained worse than baseline ($p=0.006$) with 7% of patients in the surgical group having moderate-severe dysphagia (DIGEST grade ≥2) compared with 16% in the non-surgical group ($p=0.086$). DIGEST grades did not significantly differ 3-6 months after therapy between surgical and non-surgical groups in multivariate models. At RT start, MDASI-HN swallow symptoms were significantly worse among the post-TORS group (1.4±1.3) relative to post-induction (0.1±0.4, $p=0.01$) and treatment naïve (0.5±0.8, $p<0.001$). This trend inverted at the end of RT and at 3-6 months when swallowing symptoms were better in the post-TORS group relative to non-surgical groups, although this was not statistically significant after controlling for concurrent chemotherapy.

Conclusion: While most have a functional swallow after primary TORS, almost 20% develop moderate-severe pharyngeal dysphagia in the acute postsurgical period that improves but does not recover to baseline by 3-6 months. Post-treatment dysphagia grades per MBS DIGEST were better in patients treated with primary TORS compared to primary radiotherapy, but this was not statistically significant. Symptom trajectories suggest that the trade-off for favorable late swallowing outcomes after primary TORS may be higher swallowing symptom burden during the early weeks of postoperative RT. These data have important implications on supportive care and preoperative counseling.

AHNS-029: SMOKING HISTORY DOES NOT HAVE PROGNOSTIC SIGNIFICANCE IN HPV POSITIVE OROPHARYNX CANCER PATIENTS TREATED WITH TRANSORAL ROBOTIC SURGERY

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Introduction: HPV positive (+) oropharyngeal squamous cell carcinoma (OPSCC) has a favorable prognosis. However, HPV+ patients with significant smoking histories treated with definitive chemoradiation have a worse prognosis compared to their nonsmoking counterparts. Several studies demonstrate that HPV+ patients with >10 pack year (pk-yr) smoking history treated nonsurgically fall into an intermediate risk group, compared to HPV+ non-smokers. The prognostic significance of smoking history is in surgically treated patients is not known. We sought to investigate whether smoking history is a prognostic factor in HPV+ patients treated with upfront transoral robotic surgery (TORS).

Methods: We reviewed our single institution database of patients treated with upfront TORS from 2010-2016. Exclusion criteria was non-oropharyngeal primaries, histology other than SCC, and HPV negative tumors, previous head and neck cancer history, and/or previous head and neck radiotherapy. We compared non-smokers (< 10 pk-yr) to smokers (>=10 pk-yr). We also compared recent/current smokers to remote smokers (quit >5 years ago), each group having a >=10 pk-yr smoking history. We compared continuous variables with t-test and categorical variables with X-square. We compared recurrence free survival (RFS) using Kaplan-Meier method and log rank test.

Results: Our analysis included 160 patients, mean age 59, 88.8% male. The median followup was 49 months and there were 8 recurrences (2 local, 0 regional, 6 distant). There were 82 tonsil (51.2%), and 78 base of tongue (48.8%) tumors. Adjuvant radiatiotherapy was delivered in 146 patients (91.3%), and adjuvant chemoradiation therapy was delivered in 83 patients (51.9%). There were 93 non-smokers (58.1%%), and 67 smokers (41.9%). Amongst the smokers, 24 patients (35.8%) were recent/current smokers and 43 patients (64.2%) were remote smokers. By pathologic N staging (7th edition) there were 14 (8.8%) N0, 12 (7.5%) N1, 39 (24.4%) N2A, 83 (51.9%) N2B, 7 (4.4%) N2C, and 5 (3.1%) N3. By pathologic N staging (8th edition) there were 19 (11.9%) N0, 122 (76.3%) N1, 19 (11.9%) N2. There were 67 (41.9%) T1, 80 (50%) T2, and 13 (8.1%) T3. The smoker versus non-smoker comparison groups were not significantly different with respect to age, gender, T stage, or N stage. When comparing adverse pathologic features between non-smokers and smokers, there were no significant differences in PNI (23% vs 20%, $p=0.68$), LVI (56% vs 43%, $p=0.15$), or ECE (42% vs 32%, $p=0.18$). The 3 year RFS between non-smokers and smokers was not different (96.4% vs 96.9% respectively, $p=0.285$). The 3 year RFS between remote smokers and recent/current smokers was not different (97.7% vs 95.5%, $p=0.69$). When specifically comparing the 83 patients with N2b nodal disease (7th edition staging), 3 year RFS between non-smokers and smokers was not different (97.7% vs 94.2% respectively, $p=0.82$).

Conclusions: Significant smoking history is common in HPV associated H&N cancer, seen in 40% of our cohort. In this single institution experience HPV+ smokers treated with upfront TORS did not demonstrate decreased survival compared to non-smokers. A history of smoking may be an additional factor to advocate for upfront TORS in select patients.

AHNS-030: THE RISK AND RATE OF CONTRALATERAL NODAL DISEASE IN SURGICALLY TREATED HPV-RELATED BASE OF TONGUE SQUAMOUS CELL CARCINOMA

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Purpose: To investigate the rate and risk factors of contralateral nodal disease in patients with HPV-related base of tongue (BOT) oropharyngeal squamous cell carcinoma (OPSCC).

Methods: Patients with HPV-related BOT OPSCC who underwent primary surgical treatment with transoral surgery and concomitant neck dissection from 1997-2016 at Washington University in St. Louis. All patients had either unilateral or bilateral neck dissections performed. Clinical and pathologic data was collected from patient charts. Institutional practice is to favor dissection of the contralateral nodal basin in patients with no clinical evidence of contralateral nodal disease. If patient remains pathologically free of disease in the contralateral neck, radiation was spare to that nodal basin.

Results: One hundred sixty-two patients were identified. 89 (55%) were male and 73 (45%) were female with a mean age of 58 ± 8 years. 83% had no recurrence, 8% had local recurrence, 6% had regional recurrence, and 6% had distant recurrence. Of those with follow-up greater than 12 months and a median follow-up of 62 months, 54 (36%) bilateral neck dissections. Of these, 37 patients had no clinical contralateral nodal disease. Of patients who had no clinical nodal disease in their contralateral neck, 9 (24%) had pathologic nodal disease. Of those whose tumors did and did not cross midline, pathologic contralateral nodes were present in 63% and 35% respectively. Within the subset of those with no clinical disease in their contralateral neck, occult contralateral nodes

were present in 33% and 21% of tumors that did and did not cross midline, respectively. Pathologic and clinical T stage, smoking, lateralization of tumor, and presence of ipsilateral clinical nodal disease were not associated with contralateral occult neck disease. In patients with occult neck disease, there were no regional recurrences if treated with elective neck dissection and adjuvant radiation if pathologic nodes were discovered. In patients with contralateral neck dissection and no occult nodes identified, there were no recurrences when the contralateral nodal basin was spared adjuvant radiation therapy.

Conclusion: Among patients with HPV+ BOT OPSCC, the rate of contralateral nodal disease was 48% overall with a 24% rate of occult nodal disease. Given the rate of and lack of risk factors identified for occult contralateral disease, contralateral neck dissection is recommended in this population if treated with primary surgery. With this approach, we had no regional failures if the contralateral nodal basin was spared adjuvant radiation when it remained free of occult nodal disease and no failures when the contralateral nodal basin received adjuvant radiation if occult nodal disease was identified.

AHNS-031: PATIENT-REPORTED QUALITY OF LIFE OUTCOMES AFTER OROPHARYNX INTENSITY MODULATED PROTON THERAPY BASED ON THE FUNCTIONAL ASSESSMENT OF CANCER THERAPY-HEAD AND NECK QUESTIONNAIRE

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Purpose: In the light of the rapid growth of intensity modulated proton therapy (IMPT) use in head and neck cancers over the past years, value-based assessment of proton beam therapy, including patient-reported quality of life (QoL) outcomes, is critical. There is currently a lack of data on QoL outcomes after proton beam therapy. The purpose of this study was to report QoL outcomes from the Functional Assessment of Cancer Therapy-Head and Neck (FACT-HN) questionnaire of patients with oropharynx cancer treated with IMPT in the context of first course irradiation.

Material and methods: Patients treated with loco-regional IMPT for head and neck cancer between 2011 and 2018 were enrolled in this prospective study. In the current analysis, patients with oropharynx squamous cell cancer (OPSCC), treated with curative intent at MD Anderson Cancer Center, and having at least one post-treatment visit were included. Patients with non-SCC histology, distant metastasis or patients undergoing re-irradiation were excluded. FACT-H&N scores were measured at baseline, at weekly visit during IMPT as well as at each follow-up visit up to 4 years after treatment. A paired t-test was used to assess the changes from baseline at each visit. Disease free survival was estimated using the Kaplan and Meier method.

Results: Fifty-seven patients met the inclusion criteria. Median age was 60 year-old (range: 41-84), 86% of patients were male, 91% had human papilloma associated disease, 49% were never smoker and 46% had quit smoking. In total, 28% received induction chemotherapy, 68% had concurrent chemotherapy, 7% had robotic surgery, and only 23% had single modality PBT. As per AJCC 8th Ed., 61%, 19%, 11%, 7% and 2% of patients had stage I, II, III, IVA and IVB, respectively. Median follow-up was 2.8 years (95% CI= 2.2-3.5 years). The 1- and 2-year DFS were 95% and 84%, respectively. The mean FACT-General (G), FACT-Total and FACT-Trial Outcome Index (TOI) score changes were statistically and clinically significant compared to baseline from week 3 of treatment up to week 2 post-treatment. Nadir was reached at week 6 of treatment for all scores, with maximum scores dropping by 14, 23 and 23 points compared to baseline for FACT-G, FACT-Total and FACT-TOI, respectively. Similarly, subdomain scores of physical well-being, functional well-being and head and neck additional concerns decreased from baseline during treatment, reaching a nadir at week 6 of treatment, and rapidly returning back to baseline at week 4 post-treatment. There were no difference in emotional well-being and social well-being subdomain scores across time.

Conclusion: IMPT for OPSCC is associated with favourable QoL outcomes as assessed by FACT-HN. There was acute decline in summary scores, as well as physical well-being, functional well-being and additional head and neck concerns subdomain scores during IMPT, followed by rapid return to baseline at 4 weeks post-treatment.

AHNS-032: POSTOPERATIVE FUNCTIONAL STATUS OF THE ELDERLY AFTER TRANSORAL ROBOTIC SURGERY

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IMPORTANCE: The use of transoral robotic surgery (TORS) in patients >70 is not uncommon but there is a paucity of data regarding functional status of these patients following surgery.

OBJECTIVE: To determine if patients >70 years old had significant post-operative differences in functional status compared to younger patients following primary TORS.

DESIGN: Retrospective cohort study

SETTING: Single tertiary academic center

PARTICIPANTS: Retrospective cohort study of patients that underwent TORS for resection of squamous cell carcinoma from February 2011 through July 2016. 341 patients were identified from a database of patients who underwent TORS. Patients were excluded from analysis if the surgical indication was not for resection of squamous cell carcinoma. 267 patients were included in the analysis.

EXPOSURES: Transoral robotic surgery

MAIN OUTCOMES AND MEASURES: Data collected included demographics, tumor characteristics, and cancer staging. Functional status was evaluated with diet and enteral feeding status. A validated swallowing scale, Functional Oral Intake Scale (FOIS) was calculated to quantify swallowing function. These findings were analyzed by age and malignancy status.

RESULTS: The average age of the entire cohort of 267 patients was 63.5 [SD: 9.7] years. There were 72 patients that were older than 70 years (mean [SD] age 75.9 [5.3] years). 29.6% of the patients greater than 70 years were female compared to 15.9% in patients <70 years (P=0.039). There were no significant differences with respect to tumor (p=0.521), node (P=0.406), or metastasis stages (P=0.636). The number of patients that had P16 positive tumors was 69% in the >70 years cohort versus 83.6% (P=0.011). Length of stay was 3.49 days for patients >70 relative to 2.69 days for younger patients (t-test 2-tailed P=0.034). There was no difference in readmission rates between the two cohorts. 43.7% of patients > 70 years were discharged with enteral access versus 21%

(P=0.001). At 1 year follow up there was no significant difference in patients that were still using a gastrostomy tube between age groups (7% versus 5.1%) (P=0.386). There was no significant difference in FOIS score at 1 year follow up between the two groups, 6 in elderly patients versus 6.15 (P=0.436).

CONCLUSIONS: Transoral robotic surgery is safe in patients greater than 70 years old, they have slightly increased length of stay, are more likely require perioperative enteral feeding, but are not more likely to be readmitted. At 1 year, there are similar outcomes across age groups with respect to swallowing function.

AHNS-033: THE IMPACT OF EXTRACAPSULAR EXTENSION AND TREATMENT IN PATIENTS WITH EXTRACAPSULAR EXTENSION ON OVERALL MORTALITY IN PATIENTS WITH HPV-POSITIVE OROPHARYNGEAL CANCER: A NATIONAL CANCER DATABASE ANALYSIS OF 3,158 PATIENTS

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Introduction:

Human papillomavirus (HPV)-associated oropharyngeal cancer (OPC) is an epidemic: incidence has risen 70% in the last decade alone and 70% of OPCs are now attributable to HPV. In 2017, an updated staging system for HPV-positive OPC was issued by the American Joint Committee on Cancer (AJCC) that stratifies neck disease according to node number, location and size – not extracapsular extension (ECE). Conversely, HPV-negative mucosal squamous cell carcinoma neck disease staging is stratified according to the presence of absence of ECE given its adverse impact on survival.

Objective:

To evaluate the impact of: 1) ECE on mortality in patients with HPV+ OPC with nodal metastases and 2) treatment type (surgery alone versus surgery with postoperative radiation versus surgery with postoperative chemoradiation) in patients with ECE.

Methods:

The study design was a retrospective cohort analysis of HPV+ OPC patients in the National Cancer Database undergoing primary surgery from 2010-2014. Patients with second primary cancers, distant metastatic disease, and those receiving palliative treatment were excluded. A total of 3,565 patients with HPV+ OPC met all inclusion criteria, of which 3,158 were node-positive.

Results:

Median follow-up was 16.4 (IQR 8-26.3) months. Out of the entire cohort with positive nodes, ECE status and AJCC 8thedition stage was: no ECE: n=2,018 (64%), microscopic ECE: n=574 (18%), macroscopic ECE: n=143 (5%), ECE extent not specified (NS): n=423 (13%); stage I: n=2,568 (81%), stage II: n=524 (17%), stage III: n=66 (2%). The presence of ECE was a strong predictor of treatment paradigm in node-positive patients (p<0.0001). Surgery alone was performed in 21%, 9% ,11%, and 9% of patients with no ECE, micro ECE, macro ECE, and ECE NS respectively; PORT alone was delivered in 46%, 20%%, 17%, and 19%, respectively; and adjuvant CRT was used in 33%, 71%, 72%, and 71% of patients with macro ECE. Node-positive patients with ECE experienced significantly inferior survival in comparison to those without: 95% vs. 92% at 3 years (p=0.0035). Among all node-positive patients, after multivariable adjustment for stage, lymphovascular invasion, comorbidity and treatment (age was not significant and was excluded from the model), presence of any ECE was significantly associated with overall mortality (HR 1.607, 95% CI 1.076-2.399, p=0.0204). In a subset analysis of node-positive patients without ECE, there was no mortality difference between PORT (reference) or adjuvant CRT (HR 0.891, 95% CI 0.472-1.680, p=0.7215). However, among node-positive patients with ECE, the delivery of adjuvant PORT alone was associated with a significantly increased risk of death (HR 2.070, 95% CI 1.039-4.124, p=0.0387). This result was consistent when restricting the analysis to patients with microscopic ECE (HR 3.060, 95% CI 1.101-8.506, p=0.0320).

Conclusion:

ECE remained a significant adverse prognostic factor after adjusting for AJCC 8 stage and treatment paradigm. In contrast to some single-institution studies, patients with both microscopic and macroscopic ECE experienced a survival benefit with adjuvant chemoradiotherapy over radiotherapy alone. Inability to adjust for adverse risk factors including perineural invasion and tobacco use status in this database analysis highlight the importance of ongoing and completed de-escalation trials.

SCIENTIFIC SESSION 5 – VALUE I

AHNS-034: UNDERSTANDING FINANCIAL TOXICITY IN HEAD AND NECK CANCER SURVIVORS AS A FRAMEWORK FOR SHARED DECISIONS AND AVOIDANCE OF LOW-VALUE CARE

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Importance: Extreme financial distress has been linked to greater mortality risk in cancer patients. With increasing complexity of cancer care and growing numbers of head and neck cancer (HNC) survivors, evaluating treatment-related financial harm is critical to our understanding of how patients define high-value care.

Objective: To understand survivors' treatment/post-treatment related financial burden.

Design, Setting, and Participants: To assess objective out-of-pocket expenses (OOPE), paid claims data were queried for health plan members with HNC-primary diagnosis codes (n=5,156) who received either/or a combination of surgery, chemotherapy or radiation (C/RT) between July 2013–June 2015. OOPE were the dollars associated with copays, coinsurance, and deductibles. To evaluate subjective financial well-being (FWB), patients seen in our HNC survivorship clinic between January–August 2018 were offered a survey of financial toxicity/distress (n=252). Patients with claims and survey data were the target population for this analysis.

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Main Outcomes and Measures: Main outcomes were OOPE and FWB. OOPE were obtained through HNC-related medical and pharmacy claims between July 2013–March 2018. FWB was assessed with: 1) the Financial Distress Questionnaire (FDQ) (2-item tool, scored low or high financial distress); 2) the COmprehensive Score for financial Toxicity (COST) (11-item tool, scored 0–44, wherein lower scores equate to worse toxicity).

Results: Of 3,779 health plan members who received HNC treatment-related services (73%) and 244 patients who completed FWB surveys (97%), 71 met inclusion criteria as our target population. Of these 71 patients (mean age, 64±10yr), 48 were male (68%), 65 were white (92%) and they were, on average, 6±6yr since treatment completion. The most common insurance was Medicare (n=27, 38%), followed by Commercial employer-based (n=17, 24%). Most had advanced stage III-IV disease (n=50, 70%) and 14 (20%) had recurrence/metastasis/second primary. Primary disease of the oral cavity (n=16, 23%), oropharynx (n=22, 31%) and larynx (n=17, 24%) comprised the majority of tumors. Multimodality therapy was most common, with 36 (52%) who received surgery + adjuvant treatment and 26 (37%) who received primary C/RT. 4 patients (6%) had immunotherapy. Average per-member OOPE were $3,309, with the highest incurred by Medicare members ($4,264), followed by Commercial members ($3,738), and the lowest incurred by Medicaid members ($384). The continued cost after acute treatment rose over time. When post-treatment length increased from 1 to 3 years, there was an 86% increase in OOPE. When post-treatment length increased from 3 to 5 years, there was a 24% rise in OOPE. 31 (44%) reported high financial distress by FDQ. Mean COST was 25±11 with the worst toxicity in Medicare members (COST=19). In multiple linear regression modeling, lower education level (*p=0.020*) and being single/divorced/separated/widowed (*p=0.037*) were significantly associated with worse toxicity (COST) when controlling for treatment modality and OOPE.

Conclusions and Relevance: As payors continue to shift costs to consumers, addressing the financial harms of treatment is a critical component in shared-decision making. OOPE vary widely across insurance plans, with a considerable proportion of survivors reporting high financial distress. To deliver high-value care, we must account for the financial side-effects of available therapies.

AHNS-035: THE EFFECT OF MULTIDISCIPLINARY TUMOR BOARD MEETINGS ON TREATMENT RECOMMENDATIONS IN PATIENTS WITH HEAD AND NECK CANCER

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Background: Given the complex treatment of head and neck cancer, multidisciplinary tumor board meetings ensure coordinated delivery of evidence-based treatment. Despite the integral role multidisciplinary tumor board meetings play, there exist few studies investigating its actual impact on treatment delivery. This study evaluates the effect of multidisciplinary tumor board meetings on treatment recommendations on patients with head and neck cancer and to estimate their possible cost impact.

Methods: At the University of MD Anderson Cancer Center, a tumor board involving all new consultations takes place weekly. Surgeons present cases that are discussed among head and neck surgeons, radiation oncologists, medical oncologists, pathologists, and neuroradiologists. Ten multidisciplinary board meetings between January to March 2017 were audited. Duration of discussions in minutes was recorded. The initially proposed treatment plan and the multidisciplinary recommended treatment plan were recorded for all patients as well as the reason for change in the plan. Reasons for treatment plan changes were categorized into three major categories: 1) decreased treatment toxicity, 2) increased treatment efficacy, and 3) enrollment into a clinical trial. Using logistic regression, patient and tumor characteristics that were more likely to undergo treatment plan changes were identified. To estimate cost of treatment plans, we utilized the number of treatment modalities according to the proposed and recommended use of 1) surgery, 2) radiation therapy, 3) systemic treatment, and 4) plastic surgery reconstruction.

Results: A total of 415 patients were presented at the 10 multidisciplinary board meeting. At each conference, between 31 to 57 patients were discussed. The multidisciplinary board recommendations resulted in treatment plan changes in 129 patients (31.1%). The most common (N=58, 45.0%) treatment recommendation change was enrollment into a clinical trial. Other reasons for change were for less toxic treatment (n=48, 37.2%) or more effective treatment (n=35, 27.1%). Treatment changes were more likely to occur in malignant tumors (OR=4.4, 95% CI=2.03-9.03) compared to benign pathologies, and less likely to occur in thyroid neoplasms (OR=0.25, 95% CI=0.70-0.89) and cutaneous lesions (OR=0.36, 95% CI=0.16-0.21). Discussions lasted between 1 to 12 minutes depending on the complexity of the patients. Patients with malignant disease (OR-9.21, 95% CI-0.36-23.56) or prior treatment for their tumor (OR=2.02, 95% CI=1.34-3.05) were more likely to have discussions greater than 1 minute. In 56 of the 129 (43.4%) patients with treatment recommendation changes, there was no increase or decrease in the number of modalities of treatment involved. In 43 patients (33.3%), treatment recommendations involved fewer treatment modalities, possibly resulting in less costly care. There were 30 patients (23.3%), proposed treatment involved more modalities of care.

Conclusion: Even in a highly-specialized tertiary care center, multidisciplinary tumor board meetings result in important changes in recommended treatment plans in almost one-third of patients with head and neck cancer. These recommended treatment plan changes may facilitate increased enrollment in clinical trials and improve patient outcomes while decreasing potential treatment toxicities, and improve cost of care. Multidisciplinary tumor boards are therefore an essential tool to optimize treatment in head and neck cancer patients.

AHNS-036: A PARTIALLY OBSERVED MARKOV DECISION PROCESS MODEL FOR HEAD AND NECK CANCER SURVEILLANCE

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Introduction: Head and neck cancer accounts for approximately four percent of cancer cases in the United States annually. In the post-treatment period, surveillance imaging and clinical examinations are used to monitor for recurrences. Presently, there are no high-level, evidenced-based guidelines for surveillance imaging frequency to detect relapse.The goal of this model is to guide surveillance imaging policies to monitor for disease recurrence after definitive radiotherapy.

Methods: A partially observed Markov decision process model was formulated to determine the optimal times at which to image patients. Transition probabilities were computed using a clinical patient dataset that was provided by the head and neck radiation oncology unit at the MD Anderson Cancer Center. This is a single institutional dataset and included 1508 patients with intact head and neck cancer who received definitive radiotherapy between the years 2000 - 2010. Kernel density estimation was used to smooth the sample distributions. The reward function was derived using cost estimates from the literature. Other model parameters were either estimated using data in the literature or clinical expertise.

Results: When considering all forms of relapse (local, regional and distant), our model showed that the optimal time between scans is, in general, longer than the time intervals used in the institutional guidelines. For a three-year surveillance program, an optimal solution to our model suggests imaging patients 13, 25, and 34 months post-treatment. For models with other horizons, the intervals between scans was similar to that of the three-year model. This is in comparison to frequencies between 3 and 6 months found in institutional guidelines. We note that our results are dependent on the model parameters. As locoregional relapse has the potential to be salvaged, we reran the model with locoregional considered as events in the model. We obtained similar optimal policies; however, this event discrimination led to slightly less variation in policies concerning changes in the horizon of the model.

Conclusion: Our model suggests that it may be possible to perform surveillance imaging less frequently than the recommendations from current institutional guidelines and still detect relapse for many patients. Such policy changes could potentially translate to a more cost effective surveillance program for this group of patients, and we recommend that the timing of surveillance imaging receives further study.

AHNS-037: REDUCED ACCESS TO CARE AMONG HEAD AND NECK CANCER PATIENTS

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Background: The majority of patients with head and neck cancer (HNC) present at advanced stages. Limited access to care is suspected to play a role in delayed presentation of HNC due to the fewer financial resources and lower rates of medical insurance among HNC patients. The Medical Expenditure Panel Survey, administered by the Agency for Healthcare Research and Quality, provides a comprehensive longitudinal assessment of the nation's medical status and related finances, including detailed data on access to care. This allows a unique view into HNC patients access with comparisons to other populations. This study aims to compare HNC patients access to medical care to other cancer patients and to identify factors associated with lack of access.

Methods: Publically available data from MEPS household and condition files were extracted from 1998 to 2015. Complex sampling methods were accounted for by weighting and balanced repeated replication techniques. Patients with a history of cancer were identified from clinical classification codes and were classified as 'HNC', 'Other Cancer' or 'No Cancer'. Demographic, economic and access to care variables were compared between 'HNC' and 'Other Cancer' groups using chi-squared, t and wilcoxon tests as appropriate. The association between a HNC diagnosis and regular access to care was further investigated using a multivariate logistic regression model to control for potentially confounding factors.

Results: From 1998 to 2015, 633,042 individuals completed the MEPS survey including 489 with HNC and 16,282 with other cancers, which extrapolates to 242,984 HNC patients and 9,163,718 other cancer patients at a national level. Compared to other cancer patients, HNC patients were more often male (64.7 vs 47.2%), minority race (31.5 vs 21.4%), publicly insured (34.5 vs 25.5%), with lower educational attainment (high school or less, 53.2 vs 37.5%) and worse health status (poor-fair 35.8 vs 23.2%, $p < 0.05$ for all listed comparisons). Additionally, HNC patients reported lacking regular access to healthcare more often (10.4% vs 6.1%, $p < 0.0001$), but had similar rates of being unable to obtain healthcare when sought (5.4% vs 5.7%, $p > 0.05$). Logistic regression modelling identified age, marital status, geographic region, unemployment, and insurance status as associated with lack of healthcare access. The associated between HNC and lack of access was unchanged before and after controlling for these confounding factors (Beta 0.55, 95%CI 0.29-1.05 vs 0.56, 95%CI 0.29-1.08). The most common reasons for HNC patients lacking a regular care provider were "seldom sick" (35.1%), use of various providers (24.3%), costs (8.1%) and no provider in the area (8.1%).

Conclusion: HNC patients are 70% more likely than other cancer patients to lack access to a regular care provider. Older, unmarried patients with no insurance or public insurance were least likely to have a regular provider. Future investigation is needed to determine whether reduced access to care results in delays in HNC diagnosis.

AHNS-038: THE EFFECT OF TREATMENT DELAY ON HEAD AND NECK SQUAMOUS CELL CARCINOMA (HNSCC) SURVIVAL

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Objectives: To investigate the impact of treatment time on HNSCC outcomes, and identify risk factors for treatment delay.

Introduction: In the treatment of HNSCC, timely diagnosis and treatment are associated with improved quality of care and lower patient anxiety. Assuming the disease progresses during waiting periods, delays or unnecessary prolongation of treatment can result in more extensive treatment and increased costs.

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The impact of treatment timeliness may also have an impact on health outcomes such as survival. In this study, we: 1) measure the impact that treatment delays and treatment duration have on patient survival, and 2) identify risk factors for delayed treatment initiation and prolonged treatment time.

Study Design: Retrospective Cohort

Methods: We identified 1090 cases of primary adult HNSCC treated at urban community-based academic center between 2004 and 2017. Time to treatment initiation (TTI: duration from first appointment to the initiation of surgical or radiation treatment), and treatment package time (TPT: duration from first visit to last treatment) were measured. Logistic regression analysis was performed to identify risk factors for delayed treatment. Differences in overall and disease free survival by treatment delay were assessed using multivariable Cox regression models.

Results: Average TTI was 46.1 (+/-39.9) days and average TPT was 68.3 (+/- 39.9) days. Adjusting for other clinical and pathologic factors, lip/oral cancer was found to be independently associated with TTI>=50 days [Adjusted Odds Ratio (aOR)]=1.74, p=0.015], while larynx primary [aOR=0.66, p=0.035], white race [aOR=0.61, p=0.012], and primary surgical treatment [aOR=0.31, p=0.002] were found to be associated with a TTI<50 days. Patients who had a TTI <50 days had greater survival rates than patients who had a TTI >=50 days at 3-years [71% vs. 57%] and 5-years [65% vs. 45%] (Figure 1). This pattern of improved survival rates in patients with TTI <50 days persisted in subgroup analysis of cancers of the oropharynx [72% vs. 54% at 5-years], oral cavity [67% vs. 43% at 5-years], and larynx [66% vs.43% at 5-years]. In a multivariable Cox regression, patients who had a TTI>=50 days were found to have increased mortality compared to those with a TTI<50 days [HR=1.55, 95% CI = 1.25-1.92, p<0.001]. Similarly, advanced stage patients who had a prolonged TPT had a lower survival rate than patients who had a TPT of <90 days (p=0.003).

Conclusions: This study demonstrates that delayed initiation of treatment at a threshold of 50 days corresponded with worse survival in HNSCC. Understanding that worsened patient outcomes are associated with treatment delays furthers the necessity for developing streamlined, timely HNSCC treatment protocols. Identifying predictive factors of treatment delay can help recognize at-risk HNSCC patients and pinpoint specific areas of inefficiency to minimize delay. Identifying these predictive factors is especially prudent at our medical center, which serves a largely urban and underserved community with >80% covered by public insurance.

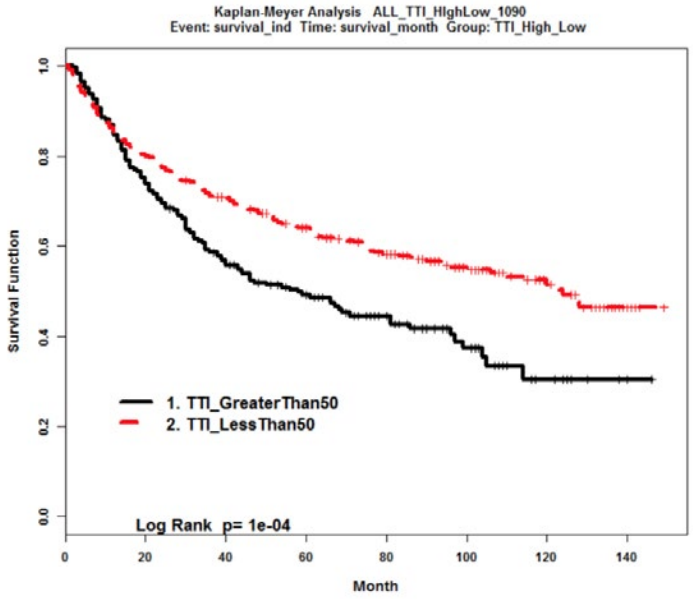

Figure 1. Kaplan-Meyer Analysis of survival in patients with a time to intervention (TTI) of greater than or equal to 50 days vs. patients with a TTI of less than 50 days.

AHNS-039: ENHANCED RECOVERY AFTER SURGERY (ERAS): IMPACT ON INTENSIVE CARE UNIT (ICU)STAY, HOSPITAL LENGTH OF STAY (LOS) AND NARCOTIC USE.

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Background: Enhanced recovery after surgery (ERAS) represents a multidisciplinary approach to reduce the impact of complex surgery through perioperative standardization of care. These strategies aim to reduce cost, increase efficiency, and importantly, improve patient care and satisfaction. The key physiologic elements of the ERAS strategy are aimed toward reduction in the metabolic stress response to surgery, controlling perioperative pain and enhanced recovery of function. The main practical elements focus on patient education and integration of the entire care team. There has been successful application to the colorectal patient population who, like head and neck cancer patients, possess a high level of comorbidities. Despite this, there has not been widespread adoption of ERAS in patients undergoing complex head and neck cancer surgery. The goal of this study is to evaluate the impact of an ERAS program on patients undergoing complex head and neck surgery with particular focus on LOS, ICU stay and narcotic use.

Methods: As part of a hospital-wide quality project, the Rush University Medical Center ERAS team launched the program for head and neck cancer patients. The initial study group were defined as those needing complex surgery, and/or surgery necessitating through and through mucosal breach, free-flap or local-regional flap reconstruction. A multidisciplinary core group developed a consensus of multimodal pathways with pre-operative, intraoperative and post-operative elements. Multiple data points were followed, including pre-op patient education, early initiation of tube feeds, intra-and post-operative pain

control, and discharge planning.

Pain Regimen: On the day of surgery phase, oral/gastric tube Gabapentin and Tylenol were given. Intraoperatively, IV Tylenol was given.

Results: The program launched July 2017. Patient data is presented for 14 months, through September 2018. There were a total of 72 patients enrolled.

Adherence to the medication pathway averaged 88%.

Time to bolus tube feeds averaged 3.3 days.

Eighty-five percent of patients ambulated on post-op day #1.

Average length of stay was 7.6 days and average ICU days was 3.2.

Length of stay index index for fiscal year (FY) 2017 (prior to ERAS adoption) equaled 1.13; (benchmark LOS index 1.04). LOS for FY 18, after adoption of ERAS, was 0.995; (benchmark 1.05).

Inpatient readmission averaged 5%. For FY 17 readmission rate measured 15.3% (benchmark 9.86%). FY 18, after ERAS adoption, readmission rates were 9.39% (benchmark 9.5%)

Average narcotic doses for the first 6 months of collecting narcotic data (11/2017-4/2018; 37 patients) measured 6.94. For the last five months of the data collection (5/2018-9/2018; 31 patients), average narcotic doses were 1.90.

Conclusions: Adoption of ERAS protocol to patients undergoing complex surgery and/or reconstruction results in decreased LOS and LOS index, decreased readmission rate and decreased narcotic use. This data has important implications for more widespread adoption ERAS protocols for safe, efficient, comprehensive care of our patients.

AHNS-040: HEAD AND NECK CANCER READMISSION REDUCTION (HANCARRE) PROJECT : SUCCESSES AND LESSONS LEARNED ONE YEAR LATER

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In order to provide high quality and high value care to the head and neck cancer patients treated at our tertiary care center, we designed this project with the following objectives:

1. Identify the factors that contribute to readmissions.
2. Compare the readmission incidence before and in the year following a multidisciplinary approach aimed at addressing identified readmission factors.
3. Assess the financial impact of the HANCARRE Project.

Design: Retrospective cohort study and comparative analysis

All head and neck oncology admissions to an otolaryngology department at our tertiary care facility were identified during a 2-year period between July 30, 2015 and June 1, 2017 with the MS-DRG 146, 147, 148 or an ICD-9 or 10 codes assigned a to head and neck oncology diagnosis. Patients with an unplanned 30-day readmission were identified, along with the type of discharge disposition. Data from FY16 and FY17 were compared to assess how implementation of a multidisciplinary quality improvement (QI) approach in FY17 affected readmission incidence.

Results: There were 22/223 (9.8%) patients with an unplanned readmission in FY16. Following the implementation of QI improvements including improved patient education materials, formalized outreach to a selected skilled nursing facility (SNF) and appropriate use of 23 hour observation, 18/225 (8.0%) patients in FY17 met criteria for unplanned readmission. Subgroup analysis revealed a notable decrease in readmissions in the group discharged to a SNF from 28.6% readmitted in FY 16 to 9.7% readmitted in FY17. Financial review showed the case mix index (CMI) for readmissions increased from 1.94 in FY16 to 4.39 in FY17 with an expected higher direct cost/case that was just over 2 times greater in FY17 than FY16.

Conclusion: Institution of our multidisciplinary HANCARRE QI project reveals a decrease in overall readmissions, most notable in the group of patients discharged to a SNF. Although the direct costs/case was over 2 times greater in FY17 compared to FY16, this reflects the marked increase in CMI for FY17 readmissions. We conclude that our project was successful in both decreasing readmissions and utilizing appropriate acute care admissions only for those who develop the most complex medical problems following discharge.

AHNS-041: GENDER DISPARITIES IN SALIVARY MALIGNANCIES: IS GENDER IMPACTING ONCOLOGICAL OUTCOMES?

Ximena Mimica, MD, Marlena McGill, BS, Ashley Hay, MD, Daniella K Zanoni, MD, Jatin P Shah, MD, Richard J Wong, Marc A Cohen, MD, Snehal G Patel, MD, Ian Ganly, MD, PhD; Memorial Sloan Kettering Cancer Center

Introduction: Previous population-based studies in salivary gland carcinomas have described a relationship between female gender and superior oncological outcome. The aim of this study was to evaluate the prognostic impact of gender in patients with salivary gland malignancies.

Materials/methods: After Institutional Review Board approval,we conducted a retrospective chart review of 886 patients that underwent primary surgery for salivary gland carcinoma at Memorial Sloan Kettering Cancer Center between 1985 and 2015. Pediatric patients were excluded. Patient, tumor and treatment characteristics were recorded. Histologies were classified in three risk groups: low, intermediate and high. Survival outcomes were determined using the Kaplan-Meier method. Unadjusted and adjusted hazard ratios for male gender were determined using the Cox proportional hazards model.

Results: Of the 867 patients identified, 52% had minor and 48% major salivary gland cancer. The most frequent histologies were mucoepidermoid carcinoma (34%), adenoid cystic carcinoma (22%) and carcinoma ex- pleomorphic adenoma (9%). Female patients were younger (58 versus 60 years; $p<0.046$) and had significantly lower rates of tobacco consumption (44% versus 64%; $p<0.001$). Female patients had a lower incidence of high-risk

histologies (25% versus 40%, p<0.001) and stage III/IV disease (30% versus 45%, p<0.001). With a median follow-up of 57 months (range 1-364 months), female patients had a superior 5- and 10-year disease-specific survival (DSS) (5 yr DSS 90% vs 79%; 10 yr DSS 81% vs 65%). The unadjusted hazard ratio showed male patients had a 2.17 fold increased risk of death (HR 2.17; 95% CI, 1.52-3.09, p<0.001). However, after adjusting for age, histological risk group and overall pathological stage male gender was no longer a significant predictor of poor DSS (HR 1.37;95% CI, 0.95-1.98, p=0.094). Subgroup analysis showed DSS for male and female patients were similar for patients with low risk histology and for intermediate risk histology. However, there was a significant poorer DSS for male patients with high risk histology (HR 1.84; 95% CI, 1.19-2.84, p=0.005).

Conclusion: Male gender with high risk histology is associated with poorer survival outcome.

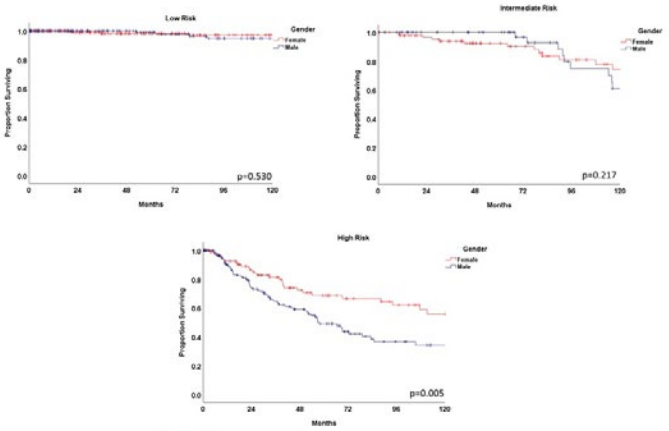


Figure 1. Gender Disease Specific Survival and Risk Histology

AHNS-042: INTRAOPERATIVE NERVE MONITORING PARAMETERS PREDICT FACIAL NERVE OUTCOME IN PAROTID SURGERY

Catherine T Haring, MD, Andrew J Rosko, MD, Susan E Ellsperman, MD, Paul Kileny, PhD, Deborah Kovatch, MA, MBA, CCCA, Bruce Edwards, AuD, Matthew E Spector, MD; University of Michigan, Department of Otolaryngology- Head & Neck Surgery

Background: Facial nerve injury is the most dreaded complication of parotidectomy. Intraoperative nerve monitoring has gained widespread use to facilitate facial nerve identification and prevent injury. Prior studies have demonstrated that the use of facial nerve monitoring decreases the rate of immediate post-operative facial nerve weakness, however there are no published data on normative values for these parameters or cutoff values to prognosticate facial nerve outcomes.

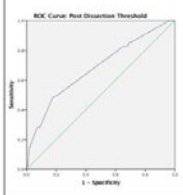
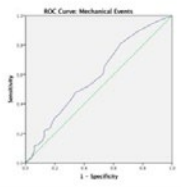
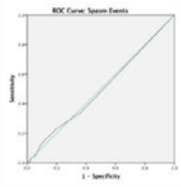
Objective: To identify intraoperative nerve monitoring parameters that predict postoperative weakness and to establish cutoff values for these parameters under which nerve function can be assured.

Methods: A retrospective case series of parotid surgery performed with intraoperative nerve monitoring by audiology was conducted. Patients who underwent primary parotid surgery for benign disease were included. Free running and evoked electromyography were utilized. Nerve monitoring parameters evaluated included nerve stimulation threshold, mechanical events and spasm events. Receiver operating curves were used to determine the accuracy of these parameters in predicting postoperative nerve outcomes (early and late) and to define optimal cutoff points to maximize the sensitivity and specificity of the chosen parameters in predicting outcomes.

Results: 223 patients were included. The rate of temporary facial nerve paresis was 45% and the rate of permanent paralysis was 1.3%. The mean pre-dissection threshold was 0.22 (range:0.1-0.6) and the mean post-dissection threshold was 0.24 (range: 0.08-1.0). The average number of mechanical events was 9 events (ranging from 0-66 events), and spasm events was 1 (ranging from 0-12). Both post-dissection threshold and the number of mechanical events predicted early post-operative facial nerve outcome (AUC 0.68, p<0001 and AUC 0.58, p=0.02, respectively), while the number of spasm events did not (Figure 1). The optimal cutoff value for threshold was 0.25 mA and for mechanical events was 8 events. If the threshold was greater than 0.25 mA, there was a 69% chance of post-operative weakness versus 35% if the threshold was less than or equal to 0.25 mA. If there were greater than 8 mechanical events, there was a 53% chance of post-operative weakness compared to 40% if there were 8 or fewer mechanical events. There were no parameters that predicted permanent facial nerve injury.

Conclusions: Facial nerve monitoring is a valuable adjunct to the knowledge of surgical anatomy and technique. Normative values of nerve monitoring parameters and optimal cutoff values provide surgeons with a baseline for interpretation of data and predict post-operative nerve function. Post dissection threshold and the number of mechanical events predict immediate post-operative facial nerve outcomes. Prediction of facial nerve function after parotid surgery is not only useful to provide anticipatory guidance to patients but may also provide surgeons with intraoperative feedback allowing them to adjust their operative techniques to improve outcomes.

Figure 1. Receiver Operating Curves and Optimal Cuffoff Values for Intraoperative Nerve Monitoring Parameters

	Post dissection threshold (mA)	Mechanical events (N)	Spasm events (N)
ROC Curve			
AUC Significance	0.68 p<0.001	0.59 p=0.02	0.50 p=0.92
Optimal cutoff Sensitivity Specificity	0.25 mA 49% 90%	8 events 48% 66%	NA

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BEST OF CUTANEOUS MALIGNANCY ABSTRACTS

AHNS-043: OUTCOMES OF CHRONICALLY IMMUNOSUPPRESSED PATIENTS WITH CUTANEOUS SQUAMOUS CELL CARCINOMA OF THE HEAD AND NECK.

Christopher M Yao, MD, Samantha Tam, MD, MPH, Mona V Gajera, BS, Neha Desai, MPH, Xiaoning Luo, MD, PhD, Rachel Treistman, BS, Anshu Khanna, MPH, Randal S Weber, MD, Jeffrey N Myers, MD, PhD, Neil D Gross, MD; University of Texas MD Anderson Cancer Center

Background: Cutaneous squamous cell carcinoma of the head and neck (cSCCHN) in the setting of chronic immunosuppression (IS) is notoriously aggressive. Defining the outcomes of cSCCHN in immunosuppressed patients is essential to better risk stratify and optimize treatment.

Objective: To characterize and determine prognostic factors influencing overall survival in cSCCHN patients with IS compared to those with no chronic immunosuppression (nIS).

Methods: Retrospective review of 972 consecutive patients with cSCCHN regardless of prior treatment treated at the University of Texas MD Anderson Cancer Center between 1996 and 2014 was undertaken. The primary outcome measure was overall survival (OS). Secondary outcomes were disease specific survival (DSS) and locoregional recurrence rate (LRR). Univariate and multivariate analyses were undertaken using the Cox proportional hazards regression model. Recursive partitioning analysis was used to risk stratify patients with CI according to OS.

Results: Of 972 cSCCHN patients included, 189 (19.4%) were characterized as IS. The most common causes of IS were insulin dependent diabetes mellitus (n=96, 50.8%), hematologic malignancy (n=51, 27.0%), and organ transplantation (n=35, 18.5%). At the time of presentation, there was no significant difference between IS and nIS patients in the TNM classification or overall stage (AJCC 7).

Five-year OS was significantly worse in patients with IS (31.6%, 95% confidence interval [CI]=23.8-39.8%) compared to nIS patients (53.1%, 95% CI=48.9-57.1%; p<0.001). Five-year DSS was 59.1% (95% CI=48.9-67.9%) in patients with IS compared to 78.8% (95% CI=75.0-82.1%) in nIS patients (p<0.001). Five-year LRR was not different in patients with chronic IS (74.9%, 95% CI=64.8-82.5%) compared to nIS patients (82.1%, 95% CI=78.4-85.3%, p=0.186). Using multivariate analysis, IS was found to be an independent predictor of OS (hazard ratio [HR] = 1.63, 95% CI=1.31-2.03) and DSS (HR=2.26, 95% CI=1.64-3.11).

Recursive partitioning analysis stratified cSCCHN patients with chronic IS into 4 groups: 1) those without prior radiotherapy and chronic IS due to insulin-dependent diabetes, autoimmune disease requiring treatment, organ or stem cell transplantation, or autoimmune deficiency syndrome (AIDS); 2) those without prior radiotherapy and chronic immunosuppression due to hematologic malignancy or other reasons (HR=1.53, 0.99-2.35); 3) those with prior radiotherapy and presenting with no nodal disease (HR=2.05, 95% CI=1.18-3.55), and 4) those with prior radiotherapy and presenting with nodal disease (HR=6.2, 95% CI=3.14-12.10).

Conclusion and Relevance: Chronic immunosuppression (IS) is an independent predictor of worse overall and disease-specific survival in patient presenting with cSCCHN. Prior treatment with radiotherapy was the most important prognostic factor in these patients, followed by reason for IS and presence of nodal disease. Risk stratification may allow for improved patient counselling, prognostication, and treatment decision-making in chronically immunosuppressed patients with cSCCHN.

AHNS-044: DEVELOPMENT OF GENE EXPRESSION SIGNATURE FOR RISK ASSESSMENT IN CUTANEOUS SQUAMOUS CELL CARCINOMA WITH A SUBANALYSIS IN THE HEAD AND NECK REGION

Jason G Newman, MD[1], Ashley Wysong, MD[2], Kyle R Covington, PhD[3], Sarah J Kurley, PhD[3], Kristen M Plasseraud, PhD[3], Robert W Cook, PhD[3], Chrysalyne D Schmults, MD, MSCE[4], Sarah T Arron, MD, PhD[5]; [1]University of Pennsylvania Health System, [2]University of Nebraska Medical Center, [3]Castle Biosciences, Inc., [4]Brigham and Women's Hospital, [5]University of California San Francisco

Cutaneous squamous cell carcinoma (cSCC) accounts for 20-50% of all skin cancers. While most cSCC patients have a good prognosis, some patients have an elevated risk of recurrence and metastasis such that cSCC mortality approaches that from melanoma. cSCC tumors located on the head and neck (H&N) make up approximately two-thirds of all cases. While most patients with H&N cSCC can be cured by conventional surgical excision or Mohs micrographic surgery, a small percentage of patients will experience regional or distant metastasis, both associated with poor outcomes. For H&N cSCC that displays high-risk clinical features, clinical decisions include the use of adjuvant therapy and/or sentinel lymph node biopsy with therapeutic neck dissection. Current staging systems are limited in their accuracy to identify truly high-risk patients to facilitate appropriate management. In this study, we sought to address this unmet clinical need by developing a gene expression signature to identify patients at high risk for recurrence and metastasis, with a subanalysis of patients with H&N lesions. Archival primary formalin-fixed paraffin-embedded cSCC tumor tissue, clinicopathologic information, and outcomes data were collected from 12 centers under an IRB-approved protocol. For test development, we selected 73 candidate genes based on literature and pathway analysis for a targeted qPCR approach and also performed global gene expression profiling by microarray on a subset of cases to maximize prognostic gene selection. Multiple machine learning methods were applied using gene expression data from a development cohort of 217 cases (130 H&N) with 25 recurrences (18 H&N). The targeted approach yielded 23 and 13 genes that were differentially expressed between recurrent and non-recurrent cases in the full cohort and H&N subset, respectively (p<0.05). Substantial overlap in genes altered in the full cohort and the H&N group was observed, particularly for regional or distant recurrences, indicating that signatures developed from the full cohort may also apply to the H&N subset. Preliminary modeling with cross-validation suggested that gene sets from the targeted approach could have improved accuracy metrics compared to clinicopathologic staging. Using the microarray data from 80 cSCC cases (52 H&N) with 29 recurrences (20 H&N), machine-learning identified a subset of 67 top-performing genes to predict metastasis. These genes will be assessed by qPCR and can be combined with gene sets from the targeted approach in a gene expression assay to be validated in an independent cohort. Overall, our preliminary results suggest that identification of a prognostic gene expression-based signature for cSCC is possible and, importantly, that these findings can be applied to patients with H&N cSCC to help guide appropriate management strategies based on accurate risk assessment.

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SCIENTIFIC SESSION 6 – HPV NEGATIVE II

AHNS-045: EARLY-STAGE LARYNGEAL CANCER: TREATMENT PATTERNS AND THE EFFECT OF TREATMENT FACILITY

Eric L Bauer, MD, Angela Mazul, PhD, Jose Zevallos, MD; Washington University in Saint Louis

Importance: Laryngeal cancer is one of the most common head and neck malignancies. Treatment with surgery or radiation is generally felt to have equal outcomes; however, the impact of where patients are treated is not well understood.

Objective: The aims of this study include: 1) Determine how treatment type was associated with survival of early-stage laryngeal cancer; and 2) Determine how treatment variation at Commission on Cancer hospital types was associated with survival.

Study Design: A retrospective cohort of cases diagnosed with T1N0M0 and T2N0M0 squamous cell carcinoma of the larynx from 2004-2015 from the NCDB.

Methods: Inclusion of all primary early-stage laryngeal cancer cases with appropriate ICD-0-3 codes that received treatment with curative intent including surgery, radiation or chemoradiation. Descriptive analysis was performed. We calculated overall survival as the time from diagnosis to either date of death due to any cause or censoring. Kaplan-Meier all-cause survival plots were constructed, and log-rank p-values were calculated. Hazard ratios (HR) for the independent effects of treatment modality and treatment facility type with overall survival were estimated by Cox proportional hazards regression.

Results: Most early-stage laryngeal tumors were treated with radiation therapy (n = 11,139; 78%). Surgery was used at academic hospitals more frequently than non-academic facilities (22% vs. 6%, respectively). Kaplan-Meier curves for laryngeal cancer showed improved survival for patients treated with surgery at an academic hospital. Multivariate analysis for the individual subsites of the larynx revealed similar survival for glottic cancer cases treated with surgery or radiation. Patients with supraglottic cancer treated with surgery had better survival (HR, 0.72; 95% CI, 0.58 to 0.83) compared to radiation therapy even after adjustment for comorbidities. Regardless of subsite or treatment facility type, chemoradiation was associated with poor outcomes. Patients who received care at an academic facility had better outcomes (overall HR, 0.73; 95% CI, 0.65 to 0.81 and glottic specific HR, 0.68; 95% CI, 0.59 to 0.79) compared with those patients treated at community cancer programs. The use of surgery was associated with improved survival at both academic and community hospitals.

Conclusion: This study represents the largest and most current analysis of early-stage laryngeal cancer treatment trends and factors associated with overall survival. Radiation continues to be the predominant treatment option in the United States. However, surgical management is a growing entity at academic hospitals. Care at an academic facility was associated with improved outcomes regardless of treatment type. These findings suggest that quality improvement studies and measures need to be implemented to better care for patients with early-stage laryngeal cancer.

AHNS-046: PREDICTORS OF POST-OPERATIVE RADIATION IN CT1-T2N0 GLOTTIC CANCER: A STUDY OF THE NATIONAL CANCER DATABASE

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Background: National Comprehensive Cancer Network (NCCN) guidelines for treatment of early-stage glottic cancer is limited to either surgery or radiation alone. However, post-operative radiation (PORT) continues to be administered to a significant subset of patients for unclear indications. The primary objective of this study was to identify factors associated with the use of PORT.

Methods: A retrospective analysis of the National Cancer Database (NCDB) was performed for primary cT1-T2N0M0 glottic squamous cell carcinoma (SCC) patients who underwent primary surgery during the years 2004-2014. Multivariate logistic regression was performed to identify independent predictors of PORT.

Results: 7109 patients were identified. The majority of tumors were cT1 (N = 5913, 84.2%) compared to cT2 (N = 1106, 15.8%). Patients were surgically treated with either local excision (N = 6370, 90.1%) or partial laryngectomy (N = 649, 9.2%). 2852 (40.6%) patients received surgery alone while 4167 (59.4%) underwent surgery and PORT. Patients between these two cohorts did not significantly vary by age, race, or comorbidity status ($p > 0.05$). Margins were negative in 67.8% (1270 of 1874) of PORT patients compared to 89.4% in surgery alone ($p < 0.001$). In multivariable regression, cT2 tumors (adjusted odds ratio [aOR], 2.27; [1.8-2.87 95% confidence interval]), positive margins (aOR 3.56 [2.92-4.33]), treatment at an Academic/Research institution (aOR 1.34 [1.10-1.64]) and more aggressive initial surgery (aOR 0.15 [1.11-0.20]) were independent predictors of PORT. 53 of 1030 hospitals analyzed across the US (5.1%) comprised the top-volume quartile, of which 76.6% were Academic/Research institutions. The top-volume quartile comprised 39.3% of those treated with surgery alone, compared to 15.1% of those receiving PORT ($p < 0.001$). Compared to the 1st quartile, treatment at 2nd quartile (aOR 3.23), 3rd quartile (aOR 5.70), and lowest quartile (aOR 5.40) institutions had significantly higher odds of receiving PORT in this model. Patient age, comorbidity, and insurance status were not predictive of PORT. In a multivariable Cox proportional-hazards model, receipt of PORT was not predictive of survival ($p = 0.41$). Five-year overall survival (OS) for those receiving surgery was 78% versus 77% for surgery with PORT ($p = 0.168$).

Conclusion: A majority of patients with early-stage glottic SCC continue to receive PORT after primary surgery despite tumor-free margins and lack of survival benefit. The highest odds of receiving PORT in multivariable analysis included treatment at lower-volume facilities, positive margins, and cT2 disease. This study highlights a critical need to re-evaluate the use of PORT in patients with early-stage glottic SCC.

AHNS-047: HOSPITAL MARKET CONCENTRATION AND COSTS OF LARYNGECTOMY

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Context: High-volume hospital care for laryngectomy has been shown to be associated with reduced morbidity, mortality, and costs; however, the majority of hospitals in the US do not perform high-volumes of laryngectomy surgery. The effect of market competition for such patients on costs has not been defined.

Objective: To examine the association between regional hospital market concentration and hospital charges for laryngectomy.

Design, Setting, and Participants: The Nationwide Inpatient Sample was used to identify 34,193 patients who underwent laryngectomy for a malignant laryngeal or hypopharyngeal neoplasm in 2003-2011. Hospital laryngectomy volume was modeled as a categorical variable. Hospital market concentration was evaluated using a variable-radius Herfindahl-Hirschman Index from the 2003, 2006, and 2009 Hospital Market Structure files.

Main Outcomes and Measures: Multivariable generalized linear regression was used to evaluate associations between market concentration and total charges and costs for laryngectomy.

Results: The majority of cases (69%) were performed at hospitals in highly concentrated (noncompetitive) markets, followed by unconcentrated (highly competitive) markets (26%). The majority of high-volume hospitals were located in highly concentrated markets (60%), followed by unconcentrated markets (40%). Market share and volume were not associated with clinically meaningful differences in total charges. Unconcentrated markets were associated with higher costs (28% [8-53%], P=0.005) relative to moderately concentrated and highly concentrated markets. High-volume hospitals were associated with lower costs (-22% [-36- -5%], P=0.012).

Conclusions and Relevance: Competition among hospitals is associated with increased costs of care for laryngectomy. High-volume hospital care is associated with lower costs of care. These data suggest that hospital market consolidation of laryngectomy at centers able to meet minimum volume thresholds may improve health care value.

AHNS-048: SELECTIVE NECK DISSECTION AT THE TIME OF SALVAGE SURGERY: A META-ANALYSIS AND SEER DATABASE STUDY

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RATIONALE: Head and neck squamous cell carcinoma (HNSCC) has variable rates of neck metastasis that vary with subsite and tumor size. Irradiation of the neck at the time of treatment can be done electively in tumors with high risk of metastasis or therapeutically for nodal metastasis. Radiation ablates lymphatic channels and reduces risk of nodal metastasis. Therefore, performing selective neck dissection at the time of salvage surgery in the clinical N0 patient has remained controversial and studies have been limited to case series.

METHODS: EMBASE and Pubmed were queried for the term "salvage OR selective OR elective neck dissection." Inclusion criteria were defined as: HNSCC, radiation to the lateral neck at time of primary treatment, undergoing salvage surgery for recurrence (>6 months after treatment) or second primary, clinically and radiographically N0 at time of salvage. Eleven studies with a total of 378 patients undergoing selective neck dissection at time of surgical salvage met inclusion criteria for meta-analysis. A fixed effects model was used to generate a pooled weighted average and 95% confidence intervals (CI) for risk of occult metastasis. The Surveillance, Epidemiology, and End Results Program (SEER) database was queried for survival in patients undergoing neck dissection after radiation therapy.

RESULTS: The rate of occult metastasis was 12.6% (CI 9.1% – 16.2%). Seven studies had reliable data for subsite and rate of occult neck metastasis. For oral cavity primaries (n = 39), the rate was 17.9% (CI 7.6% - 28.3%); for oropharynx primaries (n = 64), the rate was 12.4% (5.6% - 19.1%); for hypopharynx primaries (n = 24), the rate was 22.6% (CI 3.6% - 41.7%); for supraglottic primaries (n = 112), the rate was 27.2% (CI 22.8 – 31.8%); for glottic primaries (n = 49), the rate was 11.5% (CI 3.8% - 19.1%). SEER showed decreased rates of survival in salvage selective neck dissection in patients with hypopharyngeal and supraglottic primaries relative to oral cavity and oropharynx primaries.

CONCLUSION: The rate of occult neck metastasis at time of salvage surgery after irradiation to the neck is relatively low (12.6%). Hypopharyngeal and supraglottic subsites have increased rates of occult metastatic disease with decreased survival and selective neck dissection should be considered in these patients at the time of salvage surgery.

AHNS-049: COMPARATIVE ANALYSIS OF STAGE AT PRESENTATION, PROGNOSIS AND ASSESSING DELAY IN TREATMENT IN ORAL CAVITY SQUAMOUS CELL CARCINOMA BETWEEN RURAL AND URBAN PATIENTS IN AN UNINSURED POPULATION

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Introduction: Socio-economic status, educational level, and insurance status have previously been identified as independent factors in advanced stage at presentation, and decreased survival in patients of head and neck cancer. Rural residence is also considered to be a risk factor for the same, primarily due to a higher prevalence of the above mentioned factors.

Aims: This multi-institutional retrospective study was carried out in three large university hospitals with head neck training programs catering to a high incidence population to assess whether any differences existed in stage at presentation between socio-economically matched rural vs urban patients, and if so, to identify any other underlying factors that may be contributing to the same

Materials and methods: Multi-institutional retrospective study. After obtaining individual institutional IRB approvals (ENT/ECARP/79, ENT/IIRB/26, EQ-B/TMH/473-A), charts were reviewed for the period of January to December 2015, and patients matching the inclusion criteria as below were selected. The charts were reviewed for Stage of cancer, time since symptom onset to initial presentation and prior treatment received. 1 year follow-up data was reviewed. Detailed statistical analysis was done using SPSS. A literature review was done for comparative analysis

Inclusion criteria:

Patients with histopathological diagnosis of Squamous cell Carcinoma of the Oral cavity. Any other sub types including verrucous variants were excluded
Patients holding the National Identification card for Very Low Socio-economic status, which is ONLY issued to individuals with <1000$ annual income
1 year follow up available
Patient without any insurance or healthcare plans

Results: A total of 443 patients matched the inclusion criteria and formed the study group. 179 were from a metropolitan urban setting, and 264 were from rural communities. The demographic details are as per table 1, and the 2 groups were comparable statistically. 106 patients (59%) from the urban group vs 183 pa-

tients (66%) of rural patients had advanced disease at presentation. The mean delay from Onset of symptoms to presentation to a tertiary clinic was 33 days in the urban group vs 68 days in the rural group. Further, 81% of patients in the rural group had been seen by medical providers more than 3 times, and treated with Antibiotics, alternative medicines or local steroid gels prior to being referred in contrast to only 33% of urban patients. Sub group analysis of mortality showed no difference between the groups, when stratified by disease stage, with 93% vs 91% survival for the early group and 75% vs 79% in the advanced group

Conclusion: Rural populations have a significant delay in presentation to a tertiary Oncology clinic in comparison to urban populations. This appears to exist irrespective of insurance status and matched Socio-economic status. This may be related to differing primary care provider competence and practice patterns in these disparate settings. Although there has been significant outreach programs aimed at raising population awareness to identify this disease early, rural community providers may be an important cohort that needs to be sensitized and updated to improve early diagnosis and prognosis in these patients

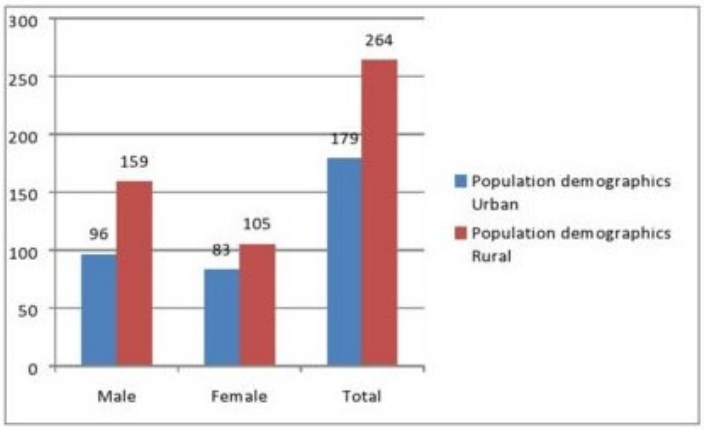

Table 1: Demographic data in study population

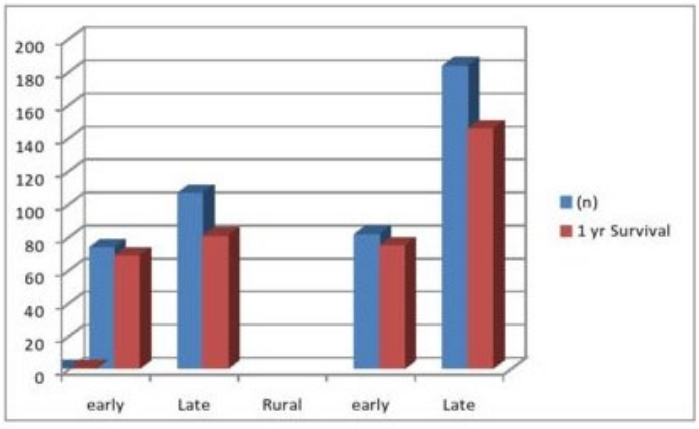

Table 2: 1 year survival stratified by disease stage

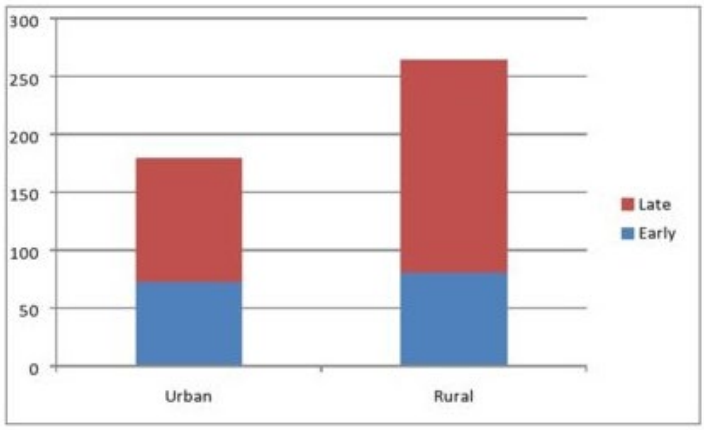

Table 3: Disease Stage in study population

AHNS-050: DIAGNOSTIC YIELD OF TRANSORAL ROBOTIC SURGERY (TORS) BASE OF TONGUE MUCOSECTOMY IN HUMAN PAPILLOMA VIRUS NEGATIVE OROPHARYNGEAL SQUAMOUS CELL CARCINOMA

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Importance: The diagnostic and therapeutic approach to patients with head and neck squamous cell carcinoma of unknown primary (CUP) has recently been transformed with the introduction of transoral robotic surgery (TORS). Whether the current paradigm of performing base of tongue mucosectomy for primary site identification applies in a human papilloma virus (HPV) negative subset of patients is unknown.

Objective: To analyze the role of TORS base of tongue mucosectomy in a cohort of patients with HPV negative CUP.

Design, Setting, and Participants: A retrospective database review from 2012-2018 was performed at two large tertiary centers to study patients with HPV negative CUP that underwent TORS base of tongue mucosectomy. HPV status was determined using p16 and/or HPV-DNA testing. Patients were included that had squamous cell carcinoma metastatic to the lateral neck based on fine needle aspiration or open biopsy. Preoperatively, all patients were classified as having an unknown primary based on normal clinical and flexible endoscopic exam, normal operative endoscopy, non-localizing imaging, and tonsillectomy. All patients underwent robotic base of tongue mucosectomy.

Main Outcome Measures: The primary outcome measure was the incidence of pathologic identification of a mucosal primary.

Results: In total, 180 patients with CUP that underwent TORS BOT mucosectomy were identified for further analysis. Of this subset, 23/180 (12.7%) were p16 and/or HPV-DNA negative based on biopsy of the nodal metastasis. Median age was 60 years at the time of diagnosis and 18/23 (78.2%) were male. Pathologic analysis of the BOT specimens showed a primary tumor in only 3/23 (13.0%) of patients.

Conclusion and Relevance: Despite prior evidence suggesting a high rate of primary site identification in HPV related disease,

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TORS base of tongue mucosectomy may not be indicated for HPV negative CUP based on a low likelihood of finding the primary.

AHNS-051: EROSIVE MANDIBULAR INVASION DEFINED
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Introduction: Oral squamous cell carcinoma often invades the mandible. The broad definitions of the erosive and infiltrative patterns of mandibular invasion have been described in the literature. However, a precise definition of what constitutes an erosive pattern of mandibular invasion has not been described and is certainly not agreed upon by pathologists across institutions. When squamous cell carcinoma of the oral cavity erodes cortical bone of the mandible, the language "abuts the mandible" is commonly utilized. This often creates ambiguity across pathologists and institutions regarding the presence bone invasion. This is important in both deciding on appropriate adjuvant therapy as well as comparing outcomes across institutions. The objective of this study is to propose a definition of erosive mandibular invasion through a pathologic review of false negative and false positive cases of mandibular invasion.

Methods: Series of 107 consecutive mandibulectomy cases for oral squamous cell carcinoma were retrospectively reviewed by a board-certified anatomic pathologist. For each case, the pathologist determined the presence/ absence of mandibular invasion, pattern of mandibular invasion, and presence/ absence of medullary space invasion. Early cortical invasion was defined as bone absorption deep to the periosteum. The accuracy of identifying bone invasion was determined by using the retrospective interpretation of bone invasion as the true interpretation, which was compared to the interpretation on the original pathology report. The association of the pattern of invasion with sensitivity of identifying mandibular invasion was examined.

Results: Sixty-nine percent (74/107) of cases were identified as having bone invasion, and 31% (33/107) of cases did not have bone invasion. Of the cases with mandibular invasion, 53% (39/74) exhibited the erosive pattern of invasion and 47% (35/74) exhibited the infiltrative pattern of invasion. Discrepancy between the original pathology report and the retrospective interpretation of the slides was found in 16% (17/107) of cases, indicating an accuracy of 84%. Amongst the 17 cases with discrepancy between the original pathology report, 71% (12/17) were false negative cases, and 29% (5/17) were false positive cases. The sensitivities for declaring mandibular invasion for the erosive and infiltrative patterns of invasion were 77% (30/39) and 91% (32/35), respectively ($p=0.08$).

Conclusions: The accuracy of declaring mandibular invasion in the original pathology report was 84% in this study. Fifty-three percent (9/17) of cases in which there was a discrepancy between the original pathology report and the retrospective interpretation were due to false negative erosive mandibular invasion cases. Although the differences in sensitivity of detecting mandibular invasion between the erosive and infiltrative patterns of invasion was not statistically significant in this study, this is certainly of clinical significance. These findings can likely be attributed to the lack of definition of the erosive pattern of invasion across pathologists. This study will present both a pictorial and written definition of erosive mandibular invasion with the hope of improving uniformity across institutions and pathologists.

AHNS-052: SOCIOECONOMIC STATUS, LENGTH OF HOSPITAL STAY, AND POST-OPERATIVE COMPLICATIONS IN ORAL CAVITY SQUAMOUS CELL CARCINOMA
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Background: Despite universal healthcare in Canada, lower SES has been associated with worse survival in oral cavity squamous cell cancer patients (OCSCC). The relationship between SES and acute post-operative outcomes is currently poorly defined. Hamilton, Ontario presents a unique population with widely varying socioeconomic status within the same geographic region including a high proportion of lower socioeconomic status (SES) with higher rates of smoking and alcohol consumption.

Objectives: To study the relationship between SES, length of hospital stay (LOHS) and postoperative complications in OCSCC.

Methods: Newly diagnosed OCSCC patients receiving primary surgical treatment from 2010-2014 were identified from a prospectively collected database from the Hamilton's regional cancer centre with a catchment of 2.3 million. Inclusion criteria included age >18 years old, pathological diagnosis of oral cavity cancer, primary surgical treatment with curative intent. Patients were excluded if they were undergoing palliative treatment or had previous head and neck surgery/radiotherapy. Postal codes were used to identify neighbourhood level socioeconomic variables via 2011 Canada Census, income quartiles were defined from groups of neighbouring municipalities based on Canada Census definitions. Demographic, social, pathological, staging, and treatment data were collected through chart review.

Results: One hundred and seventy four patients were included in the final analysis. OCSCC patients with lower SES were more likely to be younger ($p=0.041$), be male ($p=0.040$), smoke ($p<0.001$), have higher pack year history ($p<0.001$), have lower levels of education ($p<0.001$), and have lower employment levels ($p<0.001$). Lower SES patients had higher cT ($p=0.006$) and cN ($p=0.004$) staging and were more likely to receive adjuvant therapy ($p<0.001$). Lower SES score was associated with longer LOHS ($p=0.003$), Charlson comborbidity index ($p=0.014$), major and minor post-operative complications rates ($p<0.001$) and G-Tube rates ($p<0.001$). There were no statistical difference in marital status or Karnofsky score based on SES.

Conclusion: Patients with lower SES have more advanced OCSCC disease with increased comorbidities that owes itself to more acute post-operative complications and LOHS within our study population. Patients with low SES should be identified as patients that require more support during their treatment.

SCIENTIFIC SESSION 7 – RECONSTRUCTIVE ADVANCES II

AHNS-053: USE OF A NON-ICU SPECIALTY WARD FOR IMMEDIATE POST-OPERATIVE MANAGEMENT OF HEAD AND NECK FREE FLAPS; A RANDOMIZED CONTROLLED TRIAL
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Background: Free tissue transfer is an instrumental component of head and neck reconstructive surgery. Post-operative monitoring protocols following these procedures are quite variable and there is no prospective data supporting management in an intensive care unit (ICU) versus floor unit. Two recent large retrospective

series directly assessed flap and patient outcomes when managed in a ICU versus a step down unit and found that there were no significant differences in morbidity and mortality or flap failure between the groups, but there was an increased length of stay in the ICU group.

Methods: A prospective, non-inferiority, randomized controlled trial was conducted from 7/22/2016 to 9/12/2018 at a single institution. A power analysis was performed based on a power of 80%, standard deviation of 6, non-inferiority margin of 1 and error rate of 5%. Exclusion criteria included a medical need for ICU care and vulnerable populations unable to consent. The flap check protocols were identical between the subgroups. The primary outcome was length of stay and secondary outcomes were flap failure rate, surgical and medical complications.

Results: Total enrollment was 121 patients. 12 patients did not undergo a flap reconstruction and 5 patients required ICU-level care post operatively due to medical necessity. Of the 104 remaining patients, 52 were randomized to the ICU and 52 to the specialty floor. There were no significant differences between the ICU and specialty floor demographic variables including age, gender, co-morbidities, tobacco or alcohol use or prior treatment (table 1). There was a significantly longer mean operative time in the subgroup assigned to the specialty floor (606.3 minutes) versus the ICU group (557.0 minutes) (table 2). There was no significant difference in the primary outcome variable, length of stay or in any of the medical complications (table 3). The ICU group experienced a statistically significant increase in the number of wound infections, 14 (26.9%) as compared to the specialty floor group, 5 (9.6%) ($p = 0.022$) (table 3). There was no difference in rate of flap failure between the two groups. These results were replicated in an intention to treat analysis (table 4).

Conclusions: In this prospective, randomized controlled trial, we found no difference in the length of stay, flap failure rate or medical complications for head and neck free-flap patients when admitted to a specialty floor post-operatively versus the ICU . There was a significant increase in the number of wound infections in patients randomized to the ICU.

Figures:

Table 1:

Demographic Data and Preoperative Risk Factors

	Overall n = 104	ICU n = 52	Specialty Floor n = 52	P
Age > 65	44 (42.3%)	22 (42.3%)	22 (42.3%)	p>0.05
Male	81 (77.9%)	41 (78.8%)	40 (76.9%)	p>0.05
Female	23 (22.1%)	11 (21.2%)	12 (23.1%)	p>0.05
Diabetes	18 (17.3%)	11 (21.2%)	7 (13.5%)	p>0.05
COPD	16 (15.4%)	7 (13.5%)	9 (17.3%)	p>0.05
CAD	9 (8.7%)	3 (5.8%)	6 (11.5%)	p>0.05
CHF	2 (1.9%)	1 (1.9%)	1 (1.9%)	p>0.05
PAD	10 (9.6%)	4 (7.7%)	6 (11.5%)	p>0.05
Renal Insufficiency	9 (8.7%)	4 (7.7%)	5 (9.6%)	p>0.05
Depression	5 (4.8%)	3 (5.8%)	2 (3.8%	p>0.05
Prior VTE	4 (3.8%)	1 (1.9%)	3 (5.8%)	p>0.05
BMI	25.4 (12.7-43.0)	26.1 (12.7-43.1)	24.8 (14.6-36.7)	p>0.05
Active Tobacco Use	28 (26.9%)	14 (26.9%)	14 (26.9%)	p>0.05
Active ETOH Use	42 (40.4%)	23 (44.2%)	19 (36.5%)	p>0.05
Prior Chemotherapy	19 (18.3%)	9 (17.3%)	10 (19.2%)	p>0.05
Prior Radiation	35 (33.7%)	17 (32.7%)	18 (34.6%)	p>0.05
Prior Surgery	38 (36.5%)	23 (44.2%)	15 (28.8%)	p>0.05

**Significance of categorical values determined by Chi Squared, continuous variables, independent T test

Table 2:

Defect Type and Peri-Operative Data

	Overall n = 104	ICU n = 52	Specialty Floor n = 52	P
Mucosal Defects	89 (85.6%)	44 (84.6%)	45 (86.5%)	p>0.05
Skin Defects	15 (14.4%)	8 (15.4%)	7 (13.5%)	p>0.05
Operative Time	581.7 (360-1140)	557.0 (370-880)	606.3 (360-1140)	p=0.021
Intraoperative Transfusion	17 (16.3%)	9 (17.3%)	8 (15.4%)	p>0.05
Ischemia Time	149.1 (60-246)	142.3 (77-240)	156.8 (60-246)	p>0.05
EBL	267.7 (20-850)	245.7 (20-825)	289.7 (50-850)	p>0.05
Intraoperative Colloid	650.4 (0-1500)	674.0 (0-1500)	626.9 (0-1000)	p>0.05
Intraoperative Crystalloid	3209.2 (900-7550)	3190.5 (900-6725)	3227.8 (1300-7550)	p>0.05
Post Operative Days of Antibiotics	1.97 (1-10)	1.88 (1-7)	2.06 (1-10)	p>0.05

**Significance of categorical values determined by Chi Squared, continuous variables, independent T test

Table 3:

Post Operative Surgical and Medical Complications

	Overall n = 104	ICU n = 52	Specialty Floor n = 52	P
Total Post Op Surgical Complications	0.40 (0-3)	0.45 (0-3)	0.35 (0-3)	p=0.46
Flap Ischemia	4 (3.8%)	4 (3.8%)	3 (6.5%)	p=1.00
Hematoma	8 (7.7%)	2 (3.8%)	6 (11.5%)	p=0.141
Wound Infection	19 (18.3%)	14 (26.9%)	5 (9.6%)	p=0.022
Reoperation	16 (15.4%)	8 (15.4%)	8 (15.4%)	p=1.0
Flap Loss	0	0	0	p=1.0
Total Medical Complications	0.17 (0-3)	0.27 (0-3)	0.08 (0-1)	p=0.094
Pneumonia	3 (2.9%)	2 (3.8%)	1 (1.9%)	p=0.56
Thromboembolic event	3 (2.9%)	2 (3.8%)	1 (1.9%)	p=0.56
Sepsis	3 (2.9%)	3 (5.8%)	0	p=0.079
Ventilatory Requirement	3 (2.9%)	2 (3.8%)	1 (1.9%)	p=0.56
Delirium	2 (1.9%)	2 (3.8%)	0	p=0.15
Cardiovascular Complication	0	0	0	p=1.0
Post op Transfusion	4 (3.8%)	1 (1.9%)	3 (5.8%)	p=0.31
ICU Admission	4 (3.8%)	1 (1.9%)	3 (5.8%)	p=0.31
Mortality	0	0	0	-
LOS	8.62 (4-26)	8.65 (4-26)	8.58 (4-16)	p=0.92
Readmission	17 (16.3%)	11 (21.2%)	6 (11.5%)	p=0.19

**Significance of categorical values determined by Chi Squared, continuous variables, independent T test

Table 4:

Post Operative Surgical and Medical Complications (Intention to Treat)

	Overall n = 109	ICU n = 53	Specialty Floor n = 56	P
Total Post Op Surgical Complications/Patient	0.41 (0-3)	0.48 (0-3)	0.34 (0-3)	p=0.31
Flap Ischemia	6 (5.5%)	3 (5.7%)	3 (5.4%)	p=0.95
Hematoma	8 (7.3%)	2 (3.8%)	6 (10.7%)	p=0.17
Wound Infection/Breakdown	20 (18.3%)	15 (28.3%)	5 (8.9%)	p=0.010
Reoperation	18 (16.5%)	9 (17.0%)	9 (16.1%)	p=0.90
Flap Loss	1 (0.9%)	0	1 (1.8%)	p=0.33
Total Medical Complications/Patient	0.19 (0-3)	0.28 (0-3)	0.11 (0-1)	p=0.12
Pneumonia	4 (3.7%)	2 (3.8%)	2 (3.6%)	p=0.96
Thromboembolic event	3 (2.8%)	2 (3.8%)	1 (1.8%)	p=0.53
Sepsis	3 (2.8%)	3 (5.7%)	0	p=0.071
Ventilatory Requirement	4 (3.7%)	2 (3.8%)	2 (3.6%)	p=0.97
Delirium	3 (2.8%)	3 (5.7%)	0	p=0.071
Cardiovascular Complication	1 (0.9%)	0	1 (1.8%)	p=0.32
Post op Transfusion	4 (3.7%)	1 (1.9%)	3 (5.5%)	p=0.33
ICU Admission	4 (3.7%)	1 (1.9%)	3 (5.4%)	p=0.34
Mortality	0	0	0	-
LOS	9.10 (4-32)	9.09 (4-32)	9.11 (4-21)	p=0.99
Readmission	17 (16.2%)	11 (20.8%)	6 (11.5%)	p=0.20
Total Hospital Charges	$525,484	$581,190	$477,206	p=0.21
Total Hospital Reimbursement	$64,550	$110,184	$62,333	p=0.3

AHNS-054: OSSEOINTEGRATION OF SCAPULAR TIP FREE FLAPS IN MANDIBULAR RECONSTRUCTION

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Objective: To evaluate osseous union in scapular tip free flap reconstruction for mandibulectomy defects

Study Design: Retrospective Chart Review

Setting: Academic medical center

Methods: We conducted chart review of all patients receiving scapular tip free flaps for mandibular reconstruction from January 1, 2014 to January 1, 2017 with post-operative imaging obtained between 1- and 36-months from date of surgery. Scans were evaluated in the axial plane by a trained neuroradiologist complete union, partial union and non-union between the graft and native mandible (and between graft segments when osteotomies were performed) at both lingual and labial surfaces. Complete union defined as bridging cortex without visible fracture between segments at both lingual and labial surfaces; partial union defined as bridging cortex on one surface with callous formation at reciprocal surface; non-union defined as no bridging cortex at either lingual or labial surface with or without callous formation.

Results: We identified 33 patients included in this study – 22 male, 11 female. Patient age ranged from 21 to 83 years at time of surgery with an average age of 57. Each patient had between one and four follow up imaging studies with average of 2.5 imaging studies per patient. Imaging studies were acquired between 1 and 36 months from date of surgery with initial CT scan an average of 8.5 months from surgery. Patients had between 1 and 3 graft segments, i.e. 0 to 2 osteotomies, with an average of 1.6 segments per patient. Of 16 patients without osteotomies, only one (6.3%) patient had non-union of both proximal and distal sites, while 10 (62.5%) had complete bony union and 5 (31.2%) had partial bony union. Of 14 patients with one osteotomy, only two (14.3%) patients had non-union at proximal, distal and osteotomy sites, while 10 (71.4%) patients showed complete bony union and 2 (14.3%) patients showed partial union. Of 3 patients with two osteotomies, all (100%) patients showed complete bony union.

Conclusion: This series describes a large number of scapular tip free flaps performed for mandibulectomy defects. We show that the vast majority of our patients have partial or complete graft bony union irrespective of osteotomies with a very low rate of non-union. Combined with limited donor site morbidity, a long vascular pedicle and abundant soft tissue, scapular tip free flaps are a versatile option for reconstruction of complex head and neck bony defects.

AHNS-055: ASSESSMENT OF SUPPORT AND CAREGIVER BURDEN AMONG PATIENTS UNDERGOING MICROVASCULAR FREE TISSUE TRANSFER FOR HEAD AND NECK RECONSTRUCTION

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Objectives: To collect subjective and objective metrics of responsibilities, burdens, and emotional well-being of caregivers for patients undergoing head and neck microvascular free flap reconstruction.

Methods: Free flap recipients at our institution were approached preoperatively to identify their primary caregiver. Caregivers completed a pre-surgical and 1-month post-operative survey consisting of demographic questions, caregiving tasks, the Caregiver Quality of Life-Cancer questionnaire (CQOL-C), and the Patient Health Questionnaire-9 (PHQ-9).

Results: From January to September 2018, 94 microvascular free flap surgeries were performed. Twenty-two caregivers were recruited: 10 (45%) completed both the pre-operative and post-operative questionnaires; 3 (14%) completed pre-operative only and 9 (41%) completed only post-operative surveys. Patients of caregivers had the following donor sites: anterolateral thigh (9, 41%), fibula (7, 32%), radial forearm (3, 14%), rectus abdominis (1, 4.5%), gracilis (1, 4.5%), and latissimus dorsi (1, 4.5%).

Of the 22 caregivers, 77% (17) were female, 73% (16) were spouses or significant others, and 68% (15) were college educated. Median age was 56.5 years (interquartile range, IQR: 48-62; range 26-81). Participants reported assisting in the following domains of caregiving: attending medical appointments with the patient (94%, 15); helping manage medications and wound care (81%, 13 and 56%, 9, respectively); and assisting with tube feeding (8, 57%). Sixty-nine percent (11) of the caregivers reported needing to reduce working hours or take a leave of absence due to caregiving responsibilities, and 26% (5) experienced financial difficulty related to medical care.

Overall CQOL-C scores showed no statistical difference between pre-operative and post-operative timepoints (88.8 versus 92.9 respectively; p=0.635). However, when assessing specific CQOL-C burden domains, there was a significant increase in positive adaptation following the reconstructive surgery (8.9 versus 17.3 respectively, p=0.007). While the majority of caregivers reported adequate emotional, spiritual, and instrumental support both pre- and post-operatively, 26% (5) of caregivers indicated insufficient informative support during post-operative recovery. Finally, caregivers' symptoms of depression as assessed by PHQ-9 were not significantly different before and following free flap surgeries remaining stable at a minimal-to-mild range of severity (mean scores 4.4 and 4.8, respectively; p=0.79; 0-4 representing no depressive symptoms and 5-9 mild symptoms).

Conclusions: Caregivers provide critical emotional and physical support to patients undergoing complex head and neck reconstruction. Caregivers in our study are overall well-supported and showed higher positive adaptation scores following surgery, suggesting an improvement in coping abilities. In the setting of a small sample size, there were no significant differences before and following surgery as measured by the CQOL-C and PHQ-9. Nevertheless, there is an opportunity to provide additional informative support post-operatively. These data also note that the majority of caregivers adjust their employment for their caregiving responsibilities. Caregiver well-being and particularly informational support should be assessed during post-operative follow-up to optimize care for head and neck free flap recipients and their loved ones.

AHNS-056: INEFFICIENCY DURING MICROVASCULAR FREE FLAP RECONSTRUCTIVE SURGERY: SUPPLIES AND COMMUNICATION

Rohini R Bahethi, BS[1], Solomon G Seckler, BA[1], Katelyn O Stepan, MD[1], Mingyang L Gray, MD[1], Eliezer Kinberg, MD[1], Samuel DeMaria Jr., MD[2], Brett A Miles, DDS, MD, FACS[1]; [1]Department of Otolaryngology-Head and Neck Surgery, Icahn School of Medicine at Mount Sinai, New York, New York, USA., [2]Department of Anesthesiology, Perioperative and Pain Medicine, Icahn School of Medicine at Mount Sinai, New York, New York, USA.

Introduction: Free flap reconstructions are some of the most challenging, lengthy and resource-intensive operations in otolaryngology, with reported operative times ranging from 6 to 24 hours. Therefore, efficient workflow is critical. Observational studies are useful for gaining deeper insight into the workings of

a procedure and can reveal sources of inefficiency not obvious in traditional automated data collection, which may better inform future quality improvement (QI) interventions. With regards to microvascular free flap surgeries, observational studies are particularly challenging to execute due to the lengthy procedure times. However, the results are beneficial for improving resource allocation and promoting patient safety.

Methods: This is an observational QI initiative on the operative flow and through traffic of microvascular free flap operations. Trained medical students observed 13 microvascular free flap surgeries performed by head and neck surgeons at the Mount Sinai Hospital over a six-week period. For each entrance or exit, the observers noted 1) time of entrance/exit 2) role of person making the entrance/exit 3) reason for the entrance/exit.

Results: In 13 cases, a total of 3683 entries and exits were observed over 106.8 hours (6,407 minutes). The average case was 8.6 hours long, measured from patient entrance into the operating room (OR) to time of surgery completion. The absolute number of entries and exits in a case ranged from 223 to 415 (average: 283.2±62.1). Pre-incision time was 1.61±0.44 hrs, representing 19.2% of total surgery time, which constituted 31.2% of entries and exits. The circulating nurse made the most entries and exits, representing 33.1% of all entries and exits observed. 34% of pre-incision entries and exits had a clear reason, the most common being 1) supplies 2) scrubbing in 3) communication/observation. Of the total entries and exits, 46.9% had a specific reason, the most common being 1) communication/observation 2) supplies and 3) personnel changes. The remainder of the entries and exits were not critical to operative flow.

Conclusions: This study illustrates the common observation amongst surgeons that a significant portion of surgery time is not spent operating but preparing during the pre-incision period. Insufficient availability of supplies within the OR was identified as a key reason at our institution, increasing the burden on OR staff, particularly the circulating nurse, and diverting efforts away from patient-related duties. A likely contributing factor is inadequate pre-operative communication about supply needs and setup, supported by communication being the 3rd most common reason for entries and exits during the pre-incision time. While many issues related to patient care may result in delay, inadequate equipment availability and communication are targets for interventions to improve efficiency. Establishing consistent pre-operative dialogue, as well as a standardized system to ensure supply availability should be emphasized. Implications include likely reduction of total "operative" time while improving teamwork and patient outcomes. This initial data will serve as the foundation for a more comprehensive QI intervention aimed at improving the efficiency of microvascular free flaps at our institution.

AHNS-057: COST AND CLINICAL OUTCOMES OF GENERAL FLOOR CARE VERSUS INTENSIVE CARE UNIT MANAGEMENT IN THE POSTOPERATIVE SETTING FOR PATIENTS UNDERGOING HEAD AND NECK FREE FLAPS.

Jaime A Aponte Ortiz[1], Alexandra J Greenberg-Worisek, PhD[2], John P Marinelli[3], Grant M Spears, MS[4], James Clark, MD[5], Eric J Moore, MD[6], Sue L Visscher, PhD[7], Bijan J Borah, PhD[7], Jeffrey R Janus[6]; [1]Center for Clinical and Translational Science, Mayo Clinic; University of Puerto Rico School of Medicine, [2]Department of Epidemiology, Mayo Clinic Rochester, [3]Mayo Clinic School of Medicine, Mayo Clinic, Rochester, [4]Biomedical Statistics and Informatics, Mayo Clinic Rochester, [5]John's Hopkins Bayview Medical Center Department of Otolaryngology – Head and Neck Surgery, [6]Department of Otolaryngology- Head and Neck Surgery, Mayo Clinic Rochester, [7]Robert D. and Patricia E. Kern Center for the Science of Health Care Delivery, Mayo Clinic

Introduction: Head and neck oncologic patients often undergo surgical resection, requiring free flap reconstruction. These surgeries are expensive, and costs are frequently compounded by patients being managed in the Intensive Care Unit (ICU). However, a growing body of evidence suggests that floor management with a trained floor staff is equally reliable and significantly less costly. We intend to determine the difference in complication rates, length of stay and cost for head and neck free flap patients managed in the floor and in the ICU.

Methodology: A retrospective analysis of 502 patients who underwent free flap reconstructive head and neck cancer surgery at a large tertiary referral center between 1/1/2003 and 12/31/2016 was performed. Comprehensive comparative analyses of short and long-term complication rates were performed. Logistic regression was performed on the following events: short-term free-flap complications (defined as those between days 0 and 14 postoperatively), take-back surgery, and major in-hospital complications. Long-term free-flap complications (between days 15 and 105) were assessed using Cox proportional hazards analyses. Length of stay, short term, and long term costs, were analyzed using a generalized linear model. Our cost data was obtained from the Rochester Cost Data Warehouse, through which standardized costs were created by applying Medicare reimbursement to professional services and cost-to-charge ratios to hospital charges. We controlled for comorbidities such as diabetes, peripheral vascular disease, hypercholesterolemia, and hypertension in our models, as advanced cardiopulmonary compromise is in indication ICU management.

Results: Of the 502 patients in our sample, 420 were managed on the general floor and 82 were managed in the ICU. After adjusting all models, the odds ratio was higher in the ICU for short term complications, (OR 1.42 (95% CI 0.75, 2.66) (P=0.28), take back surgery (OR 1.64 (0.78, 3.45) (P=0.19), and major postoperative complications (OR 1.65 (0.76, 3.60) (P=0.21). Length of stay was also 3.29 (1.90, 4.68) (P<0.01) days longer for the ICU cohort. For the ICU sample the hazard ratio for long-term period complications was 1.01 (0.53, 1.91) (P=0.98). Additionally, short term cost was an estimated $8,772 (53,640-11,903) (P<0.01) higher in the ICU cohort, while the long-term cost was $6,541 (-2,010, 15091) (P=0.13) higher.

Conclusions and Relevance: To the best of our knowledge, this is the first study that addresses the cost of free flap management beyond the hospitalization period and the one with the largest sample. General floor management of head and neck oncologic free flap patients, when controlled for preoperative comorbidities, leads to statistically similar results regarding complications and long term costs, while displaying a statistically significant reduction in short term cost of care and length of stay. ICU based care is not necessary for most head and neck microvascular patients, and a post-operative pathway that utilizes floor management can lead to diminished financial burden for this population.

AHNS-058: LONG-TERM OUTCOMES AND COMPLICATIONS OF FIBULA FREE FLAPS IN HEAD AND NECK RECONSTRUCTION OVER A 10-YEAR PERIOD

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Importance: Vascularized bony free flaps have become standard reconstructive options for segmental mandibular and maxillary

defects resultant from various pathology. The fibula free flap is widely utilized for its ease of harvest, reliable vascular pedicle and length of available bone, yet data on long term outcomes and complication is lacking in the literature.

Objective: To determine the frequency at which patients with fibula free flap reconstructions of the head and neck develop complications in the long-term setting, defined as more than 6 months following free flap surgery.

Design, Setting and Participants: A prospectively maintained database of free flaps performed at a single institution over a 10-year period was queried. 194 fibula flaps were used to reconstruct 180 mandibular and 14 maxillary defects.

Main Outcome(s) and Measure(s): Demographics, preoperative therapy, resection location, adjuvant treatment, complications and return to the operating room. Subgroup analysis based on diagnosis and complication type was performed.

Results: 194 consecutive fibula harvests in 187 patients were included for analysis, with an average follow-up of 26 months. During the follow-up period, 97 patients suffered at least one complication, with wound breakdown (35), infection (27) and partial flap necrosis (22) among the most common. In 154 patients with at least 6 months of follow up, 25 (16.2%) suffered at least one complication more than 6 months after surgery, most commonly wound breakdown, fistula or plate extrusion (20, 13.0%), osteoradionecrosis or non-union (11, 7.1%) and infected hardware (8, 5.2%). 174 (89.6%) fibulas remained viable and implanted at last follow-up. 13 (6.8%) of fibulas failed, and another 7 (3.6%) were removed prior to last follow up. 29 patients (14.9%) of patient required a second free flap, 10 (5.2%) of which were second bony flaps, while 19 (9.8%) were soft tissue flaps. An additional 10 patients required pectoralis flaps for coverage during the follow-up period. Prior radiation therapy (OR 2.39, 95% CI 1.11-5.12, p=0.025) and prior chemotherapy (OR 2.33, 95% CI 1.09-5.48, p=0.031) predicted wound breakdown.

Conclusions and Relevance: Fibula free flaps are a versatile tool in the arsenal of the head and neck reconstructive surgeon. However, data regarding the long-term outcomes is lacking. We present comprehensive complication outcomes for the largest series of consecutive fibula free flaps reported to date, performed over a 10-year period. In half of fibulas performed at our institution, patients experienced no complications or return to the operating room. However, complications like plate extrusion and osteoradionecrosis may develop late in the post-operative course, frequently requiring operative intervention. A vast majority of fibulas survived long term, but second free flaps and pectoralis flaps may be necessary in a subset of patients with wound breakdown or recurrence.

AHNS-059: THE IMPACT OF ADJUVANT TREATMENT ON ADVANCED/HIGH-RISK CUTANEOUS SQUAMOUS CELL CARCINOMA OF THE HEAD AND NECK AFTER DEFINITIVE SURGICAL RESECTION

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Background: Cutaneous squamous cell carcinoma (cSCC) of the head and neck is treated primarily with surgical excision. Poor prognostic indicators in high-risk cSCC are largely extrapolated from mucosal literature and are highly variable in single-institution studies. In addition, the impact of adjuvant therapy remains unclear. There is especially a paucity of data for chemotherapy in the adjuvant setting.

Objective: To review the oncologic outcomes of patients with advanced/high-risk cSCC of the head and neck treated with definitive surgery and to identify risk factors for treatment failure. Our hypothesis was that 1) adjuvant systemic therapy in combination with radiation after definitive surgery provides a survival benefit, and that 2) aggressive pathologic features (perineural invasion [PNI], lymphovascular invasion, positive margins) and extracapsular extension of metastatic nodal disease (ECE) portend a worse prognosis in cSCC of the head and neck.

Methods: A retrospective chart review was performed on all patients with cSCC treated definitively with surgery requiring parotidectomy and neck dissection at the University of Miami between 2011 and 2017. Demographics, surgical and pathologic details, and treatment information were recorded. The primary outcome was progression-free survival (PFS). Survival data were analyzed by the Kaplan-Meier method. Univariable analysis using a Cox proportional hazards model was performed to determine each risk factor's effect on PFS. Factors reaching statistical significance and predetermined aggressive pathologic features were included in multivariable analyses.

Results: One hundred four patients with a median age of 68 years (range 42-91 years) were reviewed. Twenty-one patients were treated with surgery alone, 45 patients underwent adjuvant radiotherapy and 38 patients underwent adjuvant chemoradiotherapy. The 2- and 5-year PFS for the entire cohort was 63.6% and 48.6%, respectively. Pathologic factors associated with decreased PFS on univariable analysis were positive margins (Hazard Ratio [HR]=2.10, p=0.041), lymphovascular space invasion (HR=2.33, p=0.047), and PNI (HR=2.48, p=0.022). There was no effect for ECE of nodal disease (HR=0.81, p=0.57). On multivariable analysis, when accounting for the effect of these factors and for differences in adjuvant treatment, only PNI remained an independent risk factor for worse PFS (HR=2.55, p=0.044). Increasing tumor size was also a strong independent risk factor for disease recurrence (Likelihood Ratio=8.14) that remained significant on multivariable analysis, especially when tumor size was greater than 2 cm (HR=8.04, p=0.006). The use of adjuvant chemotherapy was not associated with improved PFS on Cox analysis (HR=1.29, p=0.43) and did not portend a survival benefit on Kaplan-Meier analysis when looking at the whole cohort of patients (p=0.70), nor when compared with adjuvant radiation alone for high-risk patients (p=0.15).

Conclusions: Cutaneous squamous cell carcinoma necessitating surgical treatment with parotidectomy and neck dissection has a high recurrence rate despite the use of adjuvant therapy. In our series, increasing tumor size was a strong independent risk factor for disease recurrence. Of the traditional pathologic risk factors for decreased survival, only PNI was associated with worse PFS on multivariable analysis. The presence of advanced nodal disease and ECE did not lead to a higher recurrence rate. There was no benefit for chemotherapy in this setting.

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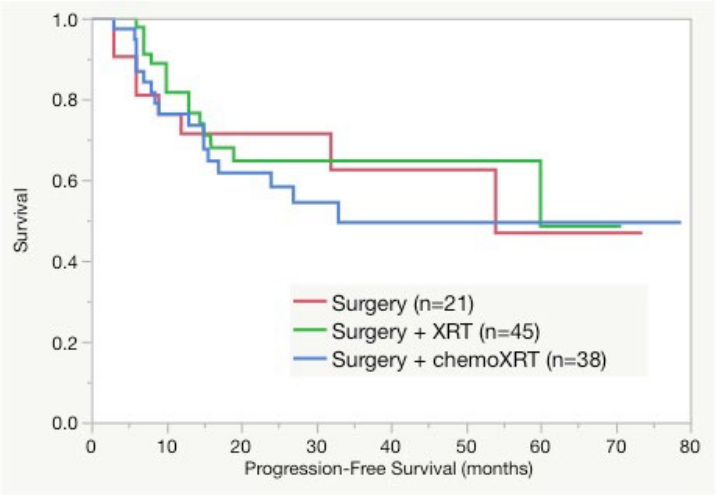
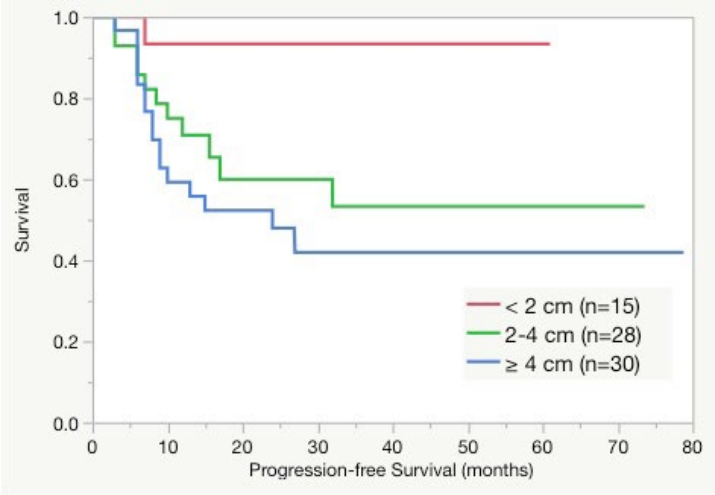
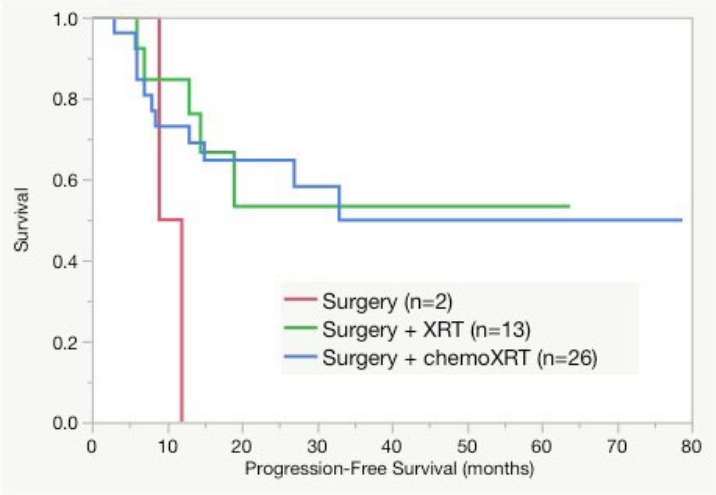
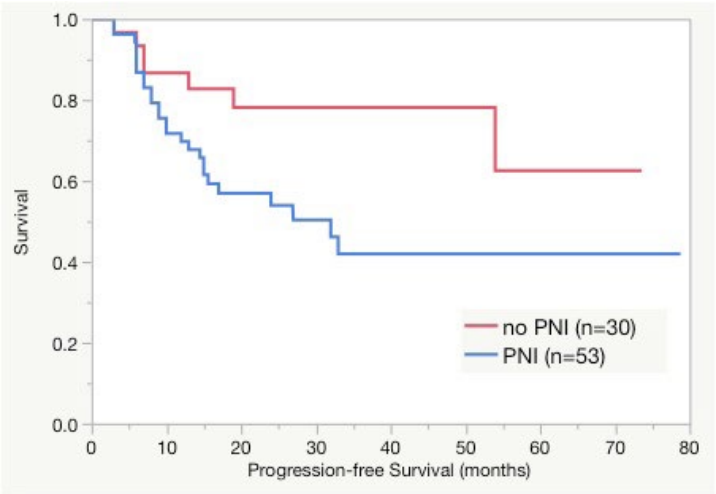






Risk Factor	Hazard Ratio (95% CI)	p value
Age > 65	1.12 (0.59-2.15)	0.73
Recurrent SCCa	1.93 (0.97-4.16)	0.059
High-risk primary site	1.33 (0.68-2.51)	0.39
Immunosuppression	1.01 (0.43-2.10)	0.97
Poorly differentiated	1.25 (0.63-2.51)	0.53
Facial nerve sacrifice	2.83 (1.44-5.40)	0.003
+ Margins	2.10 (1.03-4.07)	0.041
Lymphovascular invasion	2.33 (1.01-4.93)	0.047
Perineural Invasion	2.48 (1.13-6.21)	0.022
Extracapsular extension	0.81 (0.36-1.63)	0.57
≥ 2 positive nodes	0.87 (0.41-1.69)	0.69
Tumor size	8.14 (LR)	0.004
Skull base invasion	2.98 (1.45-5.79)	0.004
Adjuvant RT	1.02 (0.50-2.39)	0.95
Adjuvant chemotherapy	1.29 (0.68-2.40)	0.43



BEST OF SKULL BASE ABSTRACTS

AHNS-060: OSTEOGENIC DIFFERENTIATION AND VASCULOGENESIS OF PERICRANIUM DERIVED CELLS IN 3-DIMENSIONS: A POTENTIAL REPOSITORY FOR BONE IN PATIENTS UNDERGOING CRANIOFACIAL RECONSTRUCTION.

Christoph M Prummer, MD, Serban San Marina, MD, PhD, Stephen G Voss, Danielle E Hunter, Jeffrey R Janus, MD; Mayo Clinic-Rochester

Introduction:

Segmental mandibular reconstruction poses a considerable challenge in head and neck surgery. When segmental defects are critical, and thus unable to heal on their own, the use of fibular free tissue transfer has become the gold standard. However, this procedure has multiple drawbacks including donor site morbidity, increased recovery time, and training in microvascular techniques.

Tissue engineering may provide a realistic alternative to free tissue transfer for the replacement of bone following segemental mandibulectomy. Periosteum has previously been shown to heal large, even critical defects, in long and flat bones alike. Within the head and neck region, the pericranium represents a large sheet of well vascularized periosteum that is easy to harvest with low morbidity. Given these characteristics, we set out to grow these cells in 3D culture as a step toward regeneration of critical bony defects.

Methods:

Pericranial tissue was obtained from neurosurgical patients requiring open craniotomy. Mesenchymal stem cells were then prepared using standard collagenase digestion and plastic adherence methods. The presence of stem cells with three-way differentiation potential (adipogenic, chondrogenic, and osteogenic) was confirmed, respectively, by Oil Red-O, Alcian Blue, and Alizarin Red staining.

To investigate osteogenesis and vasculogenesis in 3D culture media, $1x10^6$ pericranial cells were grown in Matrigel media for 21 days. FGF, IL-1, IL-6, PDGF, TNF-, VEGF, a mix of all these cytokines or none of the cytokines were added to individual samples. Furthermore, to establish optimal growth conditions, we compared two regimens: a) osteogenic media supplemented with the above cytokines, and b) a mixed chondrogenic/osteogenic media, also supplemented with cytokines, as follows: days 1-7, chondrogenic media only; days 8-10, 50:50 chondrogenic + osteogenic media; and days 11-21, osteogenic media only.

Immunohistochemistry visualization of osteo/chondrogenesis was performed with differentiation-specific dyes as above. Vasculogenesis was visualized with a fluorescent antibody to Von Willenbrand factor (Abcam-8822). Cell nuclei were stained with DAPI. Slides were quantitated by intensity staining with Image J software. vWF/DAPI ratios were normalized to zero mean and unit variance to allow group comparisons.

To further investigate the osteogenic and vasculogenic potential of pericranium derived cells, polypropylene-fumarate (PPF) scaffolds were cross-linked with 0.03 mg/mL jelly-fish collagen by overnight incubation under a UV source, followed by incubation with pericranial cells, cytokines and mixed chondrogenic/osteogenic media as above.

Results:

Each sample demonstrated osteogenic and vasculogenic differentiation in 3D culture media, and high power field cell counts were performed. Overall, there was a trend for greater cell proliferation in the samples grown in chondrogenic media first, and transitioned into osteogenic media compared with samples grown entirely in osteogenic media.

Preliminary scanning electron microscopy of cells grown within the PPF scaffolds revealed ~90% occlusion of scaffold pores with osteocytes and extensive vWF staining.

Conclusion:

In summary, we show that periosteum derived cells can be induced to differentiate into osteocytes and vascular cells when grown in 3D culture media under various cytokine milieus. Furthermore, we anticipate these cells may be used to create new bone along a PPF scaffold, pre-coated with collagen.

AHNS-061: CHARACTERIZATION OF MALIGNANT PARAGANGLIOMAS OF THE HEAD AND NECK: A MULTI-DECADE EXPERIENCE OF A SINGLE INSTITUTION

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Objectives: 1) Classify succinate dehydrogenase subunit (SDHx) germline mutations associated with malignant head and neck (HN) paragangliomas. 2) Evaluate time from diagnosis to malignancy. 3) Describe locations of metastases and the functional status of malignant HN paragangliomas.

Methods: A prospective cohort study of patients diagnosed with a paraganglioma between the years 1963-2018 was completed. All patients were enrolled in the Huntsman Cancer Institute at the University of Utah. Data regarding diagnosis, gene/mutation, and tumor characteristics were reviewed.

Results: A total of 70 patients diagnosed with a paraganglioma were included in the study, of which 17 were found to have malignant tumors, with 6 malignant tumors being isolated to the HN. Among those with malignant tumors of the HN, all but one had mutations of the SDHB gene, with the following mutations identified: R230L, P197R, R230H, R242C, and 423+1G>A. Another patient diagnosed at 16 years had no identifiable mutation found. Non-HN malignancies had mutations associated with the genes SDHA (9.0%), SDHB (72.7%), and SDHD (18.3%). Benign paragangliomas were associated with mutations in the genes SDHB (54.7%), SDHC (5.7%), and SDHD (39.6%). The average age of diagnosis for malignant HN tumors was 35 years (range 16-65), while benign tumors demonstrated an average age of 36 years (range 32-41). Only 1 patient had a diagnosis of malignancy upon diagnosis, with an average time to malignancy of 1 year. Locations of malignant tumors in the HN included paracervical (n=1), glomus vagale (n=2), carotid body (n=2), and connective tissue (n=1). All patients with malignant HN tumors underwent excision with selective neck dissection. Positive lymph nodes were found in 5 patients, with another found to have lymph node involvement upon recurrence. Two patients were known to have regional spread prior to surgery, while 4 were found at the time of selective neck dissection. Distant bony metastases were found in 3 malignant HN paraganglioma patients. Among patients with malignant HN tumors, 83.3% were provided adjuvant radiation (n=5) and 16.6% were provided adjuvant chemotherapy (n=1). Only 1 malignant HN tumor was found to be functional, positive for Chromogranin A. One patient had mortality associated with their disease and 2 patients had disease recurrence after initial treatment.

Conclusions: Due to the paucity of literature on malignant HN paragangliomas, we present our prospective cohort of patients, with some patients followed for over 50 years. Malignant paragangliomas are rare entities that are difficult to diagnose, typically identified by the presence of regional/distant metastasis. Our study found the prevalence of malignant HN paragangliomas to be 8.6%. Our data supports performing a selective neck dissection at the time of tumor excision. Furthermore, we provide a detailed discussion of the mutations associated with malignant HN paragangliomas. All patients but one patient had SDHB gene mutations. The patient with no mutation fits into the 10% of patients under the age of 20 who may have no identifiable mutation. Ultimately, all patients with a paraganglioma benefit from counseling on hereditary paragangliomas and malignancy risk with genetic counselors regardless of the disease site.

ORAL PAPERS

SCIENTIFIC SESSION 8 – OUTCOMES AND MISCELLANEOUS

AHNS-062: PREDICTORS OF DEPRESSION AND ANXIETY IN HEAD AND NECK CANCER PATIENTS

Ashok R Jethwa, Katrina Hueniken, Catriona M Douglas, Geoffrey Liu, Andrew Bayley, Shao Hui Huang, Aaron Hansen, David P Goldstein, Madeline Li, John R de Almeida; Princess Margaret Cancer Center

Background: Depression affects up to 40% of head and neck cancer (HNC) patients. Additionally, patients with oral cavity/pharynx and larynx cancer have the third and fourth highest rates of suicide among cancer sites, respectively. Unfortunately, HNC patients with depression have been shown to have decreased survival and decreased functional outcomes. However, few studies have investigated risk factors or predictors of depression in HNC patients. We aim to identify patient factors, such as out of pocket costs or occupational loss, or disease factors, such as tumor site, stage, or treatment modality which may predict development of depression.

Methods: Patients with a new diagnosis of HNC (lip, oral cavity, pharynx, larynx, unknown primary) treated at the Princess Margaret Cancer Center/University Health Network between October 22, 2012 and December 31, 2017 were included in the study. Patients prospectively completed the Edmonton Symptom Assessment Scale (ESAS) at routine clinic visits between 10 and 14 months post-diagnosis and baseline clinical, treatment and pathologic data was collected. We excluded those patients who had recurrence less than one month prior to completing questionnaires. Patients were screened for anxiety and depression using scores of 4 or greater using the ESAS, a validated screening tool for psychological distress among cancer patients. Associations between patients who screened positive for anxiety/depression and predictor variables such as age, tumor site, stage, ECOG performance status, treatment modality, smoking and alcohol history were analyzed using univariable and multivariable logistic regression.

Results: Four hundred ninety-five patients were identified and included in our study. The mean age of the study group was 59.6 (SD=10.1), with a majority of male patients (79%). Sixty-seven percent and 66% of patients reported a smoking and drinking history, respectively. Of all patients, 78% had stage III-IV disease at diagnosis. Primary tumor sites included pharynx (57%), larynx (15%), lip/oral cavity (23%), and unknown primary (5%). Most patients had high performance status ECOG 0 (65%), ECOG 1 (33%), and ECOG 2+ (3%). Treatment modalities included chemoradiotherapy (43%), surgery alone (32%), surgery followed by adjuvant (chemo)radiotherapy (16%), and radiation alone (8%). At one year post diagnosis, 17% and 19% of patients screened positive for depression and anxiety, respectively. A younger age at diagnosis and disease progression were associated with a positive ESAS screening score for anxiety on multivariable analysis (OR=0.969, p=0.012; OR 2.662, p=0.021, respectively). ECOG status (ECOG 1 vs 0 and ECOG 2+ vs 0), and disease progression were associated with a positive ESAS screening score for depression on multivariable analysis (OR=1.917, p=0.016; OR=7.570, p=0.002; OR=3.014, p=0.011, respectively). Disease site, treatment modality, and smoking/alcohol history showed no significant association with depression/anxiety. The median lost household income was $25,000 and out of pocket cost (mid-treatment) was $498. Neither of these variables was associated with anxiety or depression on univariable analysis.

Conclusion: Younger age at diagnosis, poorer ECOG performance status, and disease progression are associated with higher rates of anxiety/depression in HNC patients after treatment while tumor stage, disease site, and treatment modality did not show a significant association.

AHNS-063: QUALITY OF LIFE, TUMOR SITE, AND AGE PREDICT DEPRESSION IN HEAD & NECK CANCER PATIENTS

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Objectives: The primary objective was to assess serial depression in patients undergoing major head and neck cancer surgery and determine if older adult patients have a greater change in depression compared to a younger cohort. A secondary objective was to determine predictors of depression.

Study Design: A single institution prospective cohort study

Methods: Patients 50 years and older undergoing head and neck cancer surgery were recruited to undergo serial depression assessments (baseline/pre-operative and 3, 6, and 12 month post-operative) using the geriatric depression scale from the Regional Geriatric Program of Metropolitan Toronto. Patients also completed serial quality of life (QOL) assessments including the Vulnerable Elders Survey (VES), Lawton-Brody Questionnaire (measure of activities of daily living), Fried's Frailty Index, and Bradburn scale of psychological well-being at the same time points. The primary outcome measure was depression score. Older adult patients are defined as age 65 and older (65+). The primary outcome measure was QOL scores for each assessment. Predictor variables were analyzed using logistic regression model and linear regression model for univariable analysis. Multivariable analysis was performed on each endpoint separately based on a backward selection algorithm. The multivariable models were created to select covariates with $p < 0.05$. Odd ratios (OR) and regression coefficients were provided with 95% confidence interval (CI).

Results: A total of 274 patients completed baseline and serial post-operative depression and QOL assessments. Older adult patients had significantly lower depression scores compared to a younger cohort at 3, 6, and 12 months post-operatively. Older adult patients had increased depression scores from baseline at 3 and 6 months after surgery, but a return to baseline 12 months post-operatively. The younger cohort had persistently elevated depression scores up to 12 months post-operatively with no return to baseline. Decreased QOL measured by the VES, Lawton-Brody, Fried's Frailty Index, and Bradburn scale were predictors of depression score for both age groups at all time points studied. Tumor site also predicted depression with higher depression scores in patients with neoplasms of the oral cavity, oropharynx, larynx and hypopharynx as compared to skin, thyroid, and salivary gland. Surgical complications were a predictor of depression at the 3 month post-operative time point.

Conclusions: Younger head and neck patients have higher depression scores that remain persistently elevated post-operatively compared to older adult patients. Post-operative QOL, tumor site, and surgical complications predict depression. Understanding predictors of depression may help identify patients who would benefit from pre-operative and post-operative counseling and pharmacotherapy for depression.

ORAL PAPERS

AHNS-064: A LONGITUDINAL PROSPECTIVE MIXED MODEL ANALYSIS OF PATIENT REPORTED OUTCOMES AFTER HEAD AND NECK CONFORMAL REIRRADIATION

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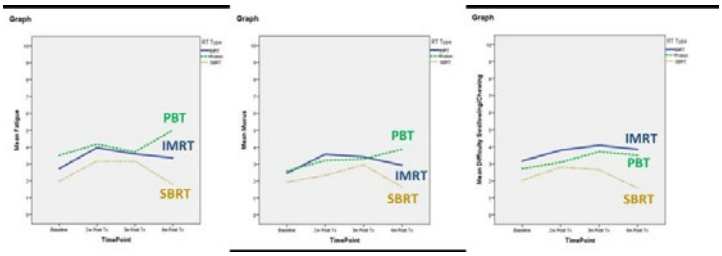
Purpose or Objective: Conformal radiotherapy can potentially lower patient symptom burden associated with head and neck (HN) reirradiation (reXRT). Here, we prospectively evaluate patient reported outcomes (PRO) using the MD Anderson Symptom Inventory – Head and Neck module (MDASI-HN) in patients with HN malignancies reirradiated with intensity modulated radiation therapy (IMRT), stereotactic body radiation therapy (SBRT) or proton beam therapy (PBT).

Material and Methods: Between 2014 -2018, 185 patients with previously irradiated HN malignancies received either IMRT (30-35 fractions over 6-7 weeks), SBRT (5 fractions over 2 weeks) or PBT (30-35 fractions over 6-7 weeks) reirradiation (reXRT) and enrolled in our prospective reXRT protocol with longitudinal PRO assessment. Protocol eligibility include biopsy-confirmed HN cancer, documented prior HN radiation to ≥40 Gy, and curative intent reXRT. Pre- and post-treatment (2 weeks, 3 months, 6 months) MDASI-HN symptom (22 items) and interference (composite of 6 items) scores were assessed for patients that completed the planned reirradiation.Symptom and interference severity (0-10 numeric scale) were based on mean scores of individual items and compared by reXRT modality (IMRT v. SBRT v. PBT). Additional potential covariates included sex, age, performance status (ECOG PS), reXRT site (skull base v. mucosal v. non-mucosal), reXRT volume, chemotherapy and surgery. Univariate and multivariate mixed models were used to determine covariates effects.

Results: Of the 109 patients eligible for assessment, 51 (47%) received IMRT, 33 (30%) received SBRT, 25 (23%) received PBT, 37% were mucosal reXRT, and 40% were skull base reXRT. Of the 23 MDASI-HN items evaluated and stratified by reXRT modality, a significant difference in mean score was found for fatigue (P=0.007), mucus production (P=0.044), and difficulty swallowing/chewing (P=0.043), all favoring SBRT (figure below).



Mixed model analysis demonstrated an independent effect of ECOG PS (P=0.001) and reXRT modality (P=0.006) on fatigue, with patients receiving SBRT reporting less fatigue (mean score 2.73; 95% CI 1.85-3.61) than those receiving IMRT (3.90; 95% CI 3.10-4.70; P=0.027) or PBT (4.71; 95% CI 3.68-5.73; P=0.002).

Type III Tests of Fixed Effects[a]

Source	Numerator df	Denominator df	F	Sig.
Intercept	1	109.409	26.026	.000
TimePoint	4	56.035	4.263	.004
Re-XRT Modality	**2**	**93.524**	**5.388**	**.006**
TimePoint*Re-XRT Modality	8	59.206	.920	.507
Re-XRTChemo0Yes1No	1	111.639	.514	.475
Re-XRTSurgery0Yes1No	1	110.180	.251	.617
ECOG PS	**2**	**114.583**	**7.852**	**.001**
RE-XRT Site	2	114.390	.015	.985
Sex	1	113.399	1.036	.311
Re-XRT CTV1 Volume	1	100.642	.015	.903
Age	1	110.330	3.248	.074

a. Dependent Variable: Fatigue.

ReXRT modality did not independently impact mucous production on mixed model analysis, which was independently associated with ECOG PS (P=0.002) and reXRT site (P=0.006). Patients receiving mucosal reXRT (mean score 3.96; 95% CI 3.09-4.82) had higher mucous production symptom burden compared to skull base (2.28; 95% CI 0.86-3.69; P=0.025) and non-mucosal reXRT (2.66; 95% CI 1.84-3.47; P=0.004).

Type III Tests of Fixed Effects[a]

Source	Numerator df	Denominator df	F	Sig.
Intercept	1	110.181	5.830	.017
TimePoint	4	52.286	1.841	.135
Re-XRT Modality	2	83.658	1.585	.211
TimePoint*Re-XRT Modality	8	55.007	1.153	.344
Re-XRTChemo0Yes1No	1	107.499	.891	.347
Re-XRTSurgery0Yes1No	1	106.057	.085	.771
ECOG PS	**2**	**110.434**	**6.431**	**.002**
RE-XRT Site	**2**	**110.714**	**5.338**	**.006**
Sex	1	108.761	.033	.856
Re-XRT CTV1 Volume	1	94.794	.573	.451
Age	1	110.036	.014	.905

a. Dependent Variable: Mucus.

Similarly, reXRT modality did not impact difficulty swallowing/chewing on mixed model analysis, which was associated with ECOG PS (P=0.006) and reXRT site (P=0.029). Patients with PS 0 and non-mucosal reXRT (4.20; 95% CI 3.18-5.22; P=0.009) had lower difficulty swallowing/chewing scores compared to PS 1-2 and mucosal reXRT (2.76; 95% CI 1.80-3.73; P=0.009).

Type III Tests of Fixed Effects[a]

Source	Numerator df	Denominator df	F	Sig.
Intercept	1	107.107	4.498	.036
TimePoint	4	66.918	.969	.431
Re-XRT Modality	2	99.309	1.708	.186
TimePoint*Re-XRT Modality	8	70.578	.735	.660
Re-XRTChemo0Yes1No	1	105.369	.335	.564
Re-XRTSurgery0Yes1No	1	103.971	.117	.733
ECOG PS	2	107.622	5.291	.006
RE-XRT Site	2	107.006	3.661	.029
Sex	1	106.311	2.056	.155
Re-XRT CTV1 Volume	1	94.555	.011	.916
Age	1	106.849	.012	.912

a. Dependent Variable: Difficulty Swallowing/Chewing.

Conclusion: In a longitudinal prospective analysis, patient reported symptom burden, as assessed by MDASI-HN, within 6 months following definitive HN reXRT with IMRT, SBRT and PBT was low. ECOG PS and site of retreatment were the most significant factors affecting symptom severity. These results suggest that the effect of radiation modality on patient reported symptom burden is minimal, with lower acute symptom burden associated with a shorter treatment course.

AHNS-065: THE ASSOCIATION BETWEEN PREOPERATIVE FUNCTIONAL PERFORMANCE AND OUTCOMES AFTER SURGICAL TREATMENT OF HEAD AND NECK CANCER

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Background: Patients with head and neck cancers have comorbidities, functional limitations, and constitutional symptoms that are associated with adverse outcomes. The impact of comorbidity in these patients is well-studied, but the independent relationship between functional performance and outcomes is unclear. Our objective was to assess the independent associations between functional performance and three important postoperative outcomes: 30-day unplanned hospital readmission, 90-day medical complications, and overall survival.

Methods: This was a single-center, retrospective, cohort study utilizing data from two prospectively maintained institutional registries, supplemented with chart review. Patients had squamous cell cancer situated at the lip, oral cavity, pharynx, or larynx, and underwent surgery with curative intent from January 2012 to December 2016. Functional performance was estimated as a maximum Metabolic equivalent (MET) capability score of <4 (poor functional performance) and ≥4 (good functional performance). Other variables included overall comorbidity severity, measured by the ACE-27 scale; preoperative weight loss; and TNM tumor staging by AJCC 7th edition guidelines. All variables were recorded prospectively. Primary outcomes were 30-day unplanned readmission and 90-day complications; the secondary outcome was overall survival rate. Unadjusted logistic regression analysis identified variables associated with outcomes. Conjunctive consolidation was used to create a practical severity staging system.

Results: A total of 654 patients were studied. The average age was 62 years (SD = 11.3), 73% were male, and 88% were white. Of the 654 patients, 75 (11%) had a 30-day unplanned readmission, 204 (31%) developed a 90-day complication, and 127 (19%) patients died during the observation period. Most patients had good functional performance (516/657; 79%), none to mild comorbidity (398/651; 61%), no preoperative weight loss (527/644; 82%), and high TNM Stage (3 or 4) disease (438/657; 67%). Poor functional performance (<4 METs), high comorbidity burden, preoperative weight loss, and advanced TNM stage were all independently associated with each of the 3 outcomes, with increased risk for each outcome ranging from 1.5 to 3 times the reference range. Using these 4 variables, a 3-step, four-category clinical severity staging system was developed to predict 30-day unplanned readmissions, 90-day complications, and overall survival.

Conclusion: Poor preoperative functional performance, comorbidity burden, preoperative weight loss, and tumor stage are all independent predictors of patient outcomes. The model developed in this study provides patient-centered risk assessment, identifies opportunities for intervention, and facilitates shared decision-making.

AHNS-066: VARIATIONS IN HEALTH LITERACY AND FOLLOW-UP AMONG DIFFERENT HEAD AND NECK CANCER SCREENING SITES

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Background: Free community head and neck cancer (HNC) screenings and education sessions are offered at many academic institutions. The education and materials provided to participants are most effective if they correspond to their health literacy. There is a paucity of evidence that describes the health literacy of these index populations to prepare materials that best fit their comprehension. The purpose of this study is to describe the health literacy of participants in a head and neck cancer screening in two locations: at an academic health center and at a public space in the community.

Methods: The validated STOFHLA and REALM tools for evaluating adult health literacy were provided to all adult, English-speaking participants at two screening locations: an academic head and neck cancer clinic and a public park in an urban setting. The raw scores from STOFHLA is categorized into three categories (inadequate, marginal, adequare) while the scores from REALM are categorized into 4-grade levels. Additionally, we evaluated the grade-level of our standard health education and follow-up materials given at screenings (Flesch-Kincaid readability statistic). Differences in health literacy by location were compared using Chi-Squared tests.

Results: Of the 40 patients screened in the cancer clinic, 31 took the literacy tests. Of the 61 patients screened in the park, 28 took the literacy tests. There were significantly more REALM graded scores below a high school grade level in the park compared to the clinic (11 and 3 respectively, p=0.008). There were significantly more S-TOFHLA graded literacy levels being marginal or inadequate in the park when compared to the clinic (6 and 1 respectively, p=0.04). Our standard health materials provided for participants were graded to be at a 13.0 grade level, or college. The Head and Neck Cancer Alliance Screening form filled out by patients at the screening was graded at a 15.1 grade level (college).

Conclusions and Relevance: The HNC screening attendees in the public urban area overall had lower health literacy than those

screened in the university cancer clinic. Despite the difference in health literacy by site, there were still attendees that had below high school grade level comprehension at both locations. Further, the average grade level of the provided education and follow-up materials and the standardized screening tool with which patients interfaced were found to be at a college reading level. To maximize HNC education and follow-up, screening materials must cater to variable levels of health literacy. Further, the location of a HNC screening may play a role in the attendees' health literacy levels.

AHNS-067: ELEVATED RISK OF HEAD AND NECK CANCER IN PATIENTS WITH HISTORY OF HEMATOLOGIC MALIGNANCY

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Introduction: Over one million people in the United States are either living with or in remission from a hematologic malignancy– including leukemia, lymphoma, and myeloma. Previous studies have demonstrated increased risk for certain second primary neoplasms in survivors of hematologic malignancies, including a case series showing increased risk of head and neck cancer after Hodgkin's Lymphoma. However, research specifically on the risk of head and neck solid tumors in patients with prior hematologic malignancies is very limited.

Methods: Data on 30,939,656 veterans was gathered from the Veteran's Health Administration (VHA) Corporate Data Warehouse (CDW). Patients were included if their birthdate was between 1/1/1910 and 12/31/1969. Outpatient problem lists were queried for diagnoses of hematologic and associated malignancies, and solid head and neck cancers using ICD codes. Age at cancer diagnosis and months of survival following diagnosis were calculated. Demographic information such as race and sex were included, as well as limited available data on alcohol and tobacco use from the outpatient problem list. Chi-square, t-test, and binary logistic regression analyses were conducted with a p value <0.05 indicating statistical significance.

Results: A total of 207,322 cases of hematologic malignancy that did not follow a prior diagnosis of head and neck cancer, as well as 113,995 cases of head and neck cancer were identified in this cohort. In patients with a hematologic malignancy diagnosis, the rate of head and neck cancer was 0.65%, versus 0.37% in patients with no prior hematologic malignancy – a relative risk of 1.79 ($p<0.0001$). Subsites of head and neck cancer were analyzed, and prior hematologic malignancy was a risk factor for oral cavity, oropharynx, salivary gland, nasopharynx, nasal cavity / accessory sinus, larynx, and thyroid tumors ($p<0.0001$ for all). Relative risk for development of head and neck cancer after hematologic malignancy for each site ranged from lower in laryngeal tumors (1.31) to higher in salivary gland (2.81), nasopharynx (2.84), and nasal cavity / accessory sinus tumors (3.03). On multivariate analysis, with race, sex, tobacco use, and alcohol use included, prior hematologic malignancy remained a significant risk factor for all aforementioned subsites except larynx. For several subsites, prior hematologic malignancy was also associated with shorter survival times – from 10 months (oral cavity) to 20 months (salivary gland and larynx) less than patients with no previous hematologic malignancy.

Conclusions: In a study of over 30 million veterans, prior diagnosis of hematologic or associated malignancy was associated with an increased risk of solid head and neck cancers in a range of subsites. Additionally, patients with prior hematologic malignancy had shorter survival times for several head and neck cancer subsites. Further investigation into the risks of specific hematologic malignancies is warranted.

Scientific Session 9 – Advances in Systemic Therapy

AHNS-068: COMBINED INHIBITION OF WEE1 AND RAD51 ENHANCES CELL KILLING IN HNSCC

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Background: Current treatment of head and neck squamous cell carcinoma (HNSCC) consists of multi-modality therapy with surgery, radiation, and chemotherapy. Despite significant improvements in these modalities, there are limited treatment choices for recurrent/metastatic and platinum refractory HNSCCs, and overall survival remains very poor resulting in high morbidity. Therefore, novel therapeutic approaches are badly needed. Wee 1 is a tyrosine kinase that phosphorylates CDC2 at Tyr 15 and as such plays a pivotal role in the G2 DNA damage checkpoint. Recent clinical data show remarkable anti-tumor activity of the Wee1 kinase inhibitor AZD1775 in many cancer cells including HNSCC. This inhibitor acts to abrogate the G2 cell cycle checkpoint. HNSCC, especially those with TP53 mutations are reliant on repairing DNA damage during arrest at this cell cycle checkpoint. Tumor cells that are unable to rely on the G1 checkpoint are more sensitive to G2 checkpoint abrogation. High-level expression of Rad51, a key factor in homologous recombination, has been observed in a variety of human malignancies including HNSCC. During replication stress, Rad51 localizes with RPA32 to protect nascent DNA at stalled forks and mediates replication restart, thus allowing tumor cells to repair DNA damage. We and others have shown that, in addition to its effects on the cell cycle, inhibition of Wee1 impairs Rad51- mediated homologous recombination (HR) repair through forced activation of CDK1, leading to senescence and apoptosis in HNSCC cells. As with any targeted therapy, drug benefit could be achieved with novel therapeutic combinations. Therefore, we hypothesize that simultaneous targeting of Wee1 and Rad51 will result in greater cell killing in preclinical models of HNSCC.

Materials and Methods: Clonogenic survival assays, western blotting, and an orthotopic mouse model of oral cancer were used to examine the in vitro and in vivo sensitivity of mutant TP53 and HPV+ HNSCC cell lines to Rad51 inhibitor, B02, AZD1775 alone or in combination. Cell cycle analysis, DNA damage (γH2AX), 3D spheroid model and apoptosis assays (TUNEL staining and PI/Annexin V) were performed to dissect molecular mechanisms.

Results: Combination of B02 and AZD1775 resulted in synergistic effect in these cell lines. Mechanistically, these drugs interact synergistically to induce DNA damage, replication stress, and impaired Rad51-mediated HR through activation of CDK1 and decreased CHK1 phosphorylation in a time-dependent manner, culminating in mitosis associated with apoptotic cell death. Additionally, combination of B02 and AZD1775 is associated with an accumulation of cells in S-phase followed by an increase in Sub G1 fraction, indicative of replication stress induction and apoptosis respectively. Significant decrease in tumor growth was only found in vivo in HPV+ HNSCC tumor bearing mice following treatment with B02 and AZD1775 compared to controls and either drug alone, consistent with the in vitro findings.

Conclusions: Selective combined targeting of replication stress and Rad51 HR repair may represent an effective therapeutic approach for killing head and neck cancer.

ORAL PAPERS

AHNS-069: ROLE OF INDUCTION CHEMOTHERAPY FOR ORAL CAVITY SQUAMOUS CELL CARCINOMA

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Aim: to investigate the value of adding Induction chemotherapy (IC) in the treatment of locoregionally advanced oral cavity squamous cell carcinoma (OCSCC) to patient outcomes and possibility of organ and functional preservation.

Methods: A retrospective review of the medical records of all patients with locoregionally advanced (stage III and IV) OCSCC who were treated in MD Anderson Cancer Center between 1995 and 2018 with IC for curative intent followed by definitive local therapy. Patient demographics, disease staging, tumor characteristics and treatment details were collected.The outcomes of interest included: evaluation of the response to IC, survival outcomes including both overall survival (OS) and Disease-specific survival (DSS); and disease recurrence.

Results: A total of 133 patients were included in this study. The median age at time of presentation was 53.5 years. The median follow-up time was 49.8 months (range, 2.9 to 258.8 months). Nodal disease at time of presentation was seen in the majority of our patients (85%). The overall stage was IV in 80.5% and III in 19.5%. The tumor epicenter was in the oral tongue in the majority of cases (57.1%). Following 2 cycles of IC, 86 (64.7%) achieved at least partial response, and 5 patients had a complete response. Stable disease was seen in 33 patients (24.8%), while 14 (10.5%) had progressive disease. Subsequent treatment following IC consisted of either a) surgery in the majority of patients (79.7%) with or without postoperative radiation (RT) or chemoradiation (CRT), or definitive CRT/RT followed by salvage surgery for any residual disease in 20.3 %. Fifteen of the 86 patients who had at least partial response to IC had less extensive surgery than was originally planned as follows: 7 patients avoided total glossectomy, 1 avoided total palate resection, 2 avoided mandibulectomy, 4 had partial glossectomy instead of subtotal or hemi-glossectomy. One patient was able to avoid surgery at the primary site and had only neck dissection for residual nodal disease. Among the 86 patients who responded to IC, 16 received definitive CRT or RT. The 5-year OS and DSS rates were 52.3% and 67.7%, respectively, in the entire cohort. Patients with at least partial response showed significantly better OS (67%) and DSS (81%) compared to those with stable or progressive disease (Log rank, P= 0.007 and < 0.0001, respectively). There was no difference in survival outcomes between different treatment modalities following IC in either the entire cohort or in the patient subgroup that responded to IC as well. Recurrence occurred in 53 patients (39.8%). The local, regional and distant metastases control rates were: 75.9%, 88.7 and 84.2% respectively.

Conclusion: Our study demonstrates a high response rate to IC in patients with advanced oral cavity cancer. Patients who achieve at least a partial response to IC have a more favorable outcome. Our data suggest that the response to IC can be beneficial in organ preservation and improving the functional outcome and even avoiding surgery at all in some patients. The role of IC in advanced oral cavity cancer deserves further study.

AHNS-070: SAFETY, PHARMACOKINETICS, AND PHARMACODYNAMICS OF NF-KB MEDIATED APOPTOSIS OF THE ANTI-INFLAMMATORY BOTANICAL DRUG APG-157 IN PATIENTS WITH ORAL SQUAMOUS CELL CARCINOMA

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Introduction: There have been several preclinical cancer studies using botanical drugs. Most of them contain polyphenols such as curcumin, resveratrol, and related flavonoids as active molecules. In a previous pilot study, we showed that oral administration of curcumin, a polyphenol, for 10 minutes in normal and oral squamous cell carcinoma (OSCC) subjects led to the inhibition of inflammatory cytokine expression in saliva, pointing to the potential utility of oral administration of such drugs for the treatment of OSCC. This study describes the results from longer term treatment of OSCC with an advanced botanical product containing multiple polyphenols.

Methods: A double-blind, randomized, placebo-controlled phase I clinical trial was conducted with a botanical preparation containing a synergistic combination of polyphenol molecules (pharmaceutical name APG-157). Signature molecules were identified and characterized per US FDA guidance for combination, botanical drugs. 12 Subjects with oral cancer and 13 normal control subjects were recruited. Two different doses of the drug, 3x100 mg and 3x200 mg, were tested. The drug was delivered orally each hour for 3 consecutive hours. Blood and saliva were collected pre-treatment and 1, 2, 3, and 24 hours post-treatment. Three signature molecules of this multi-molecular drug and their metabolic derivatives were evaluated by LC/MS (liquid chromatography/mass spectrometry) analysis of the serum. Salivary cells and supernatants were analyzed for the expression of cytokines. Salivary and plasma samples were studied for RNA expression.

Results: EKG analysis of pre-and 24 hour post- APG-157 treated subjects indicated the absence of cardiac toxicity. Liver and kidney function tests of pre- and post-treatment serum samples did not show any toxicity. Signature polyphenols were not detected in most samples at the zero time point, nor in any of the placebo control samples at the 1, 2, 3, or 24 hour time points. Following APG-157 treatment, signature drug molecules and derivatives were detected at the 1, 2, 3, and 24 hour time points in various concentrations. Cytokine levels were evaluated in salivary cells and supernatant by the multiplex ELISA method. There was a dose-dependent inhibition of IL-1β, TNF-alpha and IL-8 in the salivary supernatant of cancer subjects treated with the drug. There was also an inhibitory effect in the expression of IL-8 in the salivary cells of the cancer subjects. The RNA expression analysis revealed the presence of mitochondrial transcripts and increasing levels of BMI-1 transcripts in the plasma of post treatment samples. Expression of wild type p53 and up-regulation of CDKN1A (p21) in the 200mg treated samples were observed, indicating activation of apoptotic and senescence pathways.

Conclusions: The data demonstrated that oral treatment with APG-157 is well tolerated, without toxicity in control or cancer subjects. The signature molecules and metabolic derivatives were detected in the circulation, pointing to absorption of the drug. The inhibitory effect on cytokines and activation of multiple apoptotic and senescence markers in circulating plasma signal promise for its use for treatment of oral cancers.

AHNS-071: HEAD AND NECK SURGEON'S PERCEPTION REGARDING PALLIATIVE CARE

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ORAL PAPERS

Background: Cost and quality of end-of-life care for cancer patients is frequently debated, and palliative care (PC) has an important role in value-based healthcare for the treatment of patients with head and neck cancer (HNC). PC is an underutilized and often misunderstood discipline in the treatment of patients with serious illness. PC can be implemented at any stage of cancer treatment, including at diagnosis (as recommend by the National Cancer Institute), and involves managing symptoms, optimizing quality of life, providing prognostication, and addressing psychosocial concerns. Yet, there is a discrepancy between recommendations and actual utilization of PC in HNC patients.

Objective: Our intent was to assess head and neck surgeon's perceptions and utilization of PC, perceived barriers to PC referral, and competencies in delivering PC.

Methods: An investigator-generated survey was distributed nationally to HNC surgeons through the American Academy of Otolaryngology - Head and Neck Surgery and 80 individuals responded.

Results: Among completed responses, 90.5% were men, and 63.2% practiced in academic settings. Most respondents disagree with the notion that PC is the same as hospice (89.7%) and that it is contraindicated during curative therapy (82.4%). Respondents report that 44.4% of their patient population is comprised of HNC patients, and 9.1% are terminal (<6 months life expectancy). Respondents on average refer 18.7% of their cancer patients to PC and 8.7% to hospice. The shortage of PC providers (51.5%), negative connotations associated with PC (51.5%), and limited time for consultation during clinical interactions (33.8%) are frequently-reported barriers to implementing PC. Fifty percent of respondents believe that HNC surgeons (vs. medical oncologists, primary care providers, etc.) should be responsible for end-of-life (EOL) discussions, and most disagree that PC can only be delivered by specialists (73.5%). However, relatively few are comfortable managing EOL pain symptoms (17.6%) and psychosocial aspects of EOL care (8.8%). Interestingly, 33.3% of female respondents (vs. 5.3% of male respondents) are comfortable with managing psychosocial aspects of care (p=0.02). Most respondents believe that PC should be initiated at the time of recurrence (29.4%) or when there is locally advanced disease (25.0%) (Figure). More years in practice is associated with referral to PC at later stages of disease progression (p=0.04). However, in multivariable regression analysis, PC referral timing is predicted by respondents' percent of patients referred to PC (the more patients they refer, the earlier they believe referral should occur; p=0.03), and the belief that PC does not equate to hospice (p=0.01).

Conclusion: Most HNC surgeons surveyed report an accurate understanding of PC, but PC is not initiated for most cancer patients, and it is often initiated much later in disease progression, contrary to national recommendations. Respondents cite limited PC providers as a barrier and report lacking comfort in delivering aspects of PC, such as pain management and psychosocial support. Therefore, merely implementing early PC consultations is not the only effort needed to address this gap in care delivery. Elevating HNC surgeons' primary competencies in delivering various aspects of PC could benefit HNC patients and reduce overall cost.

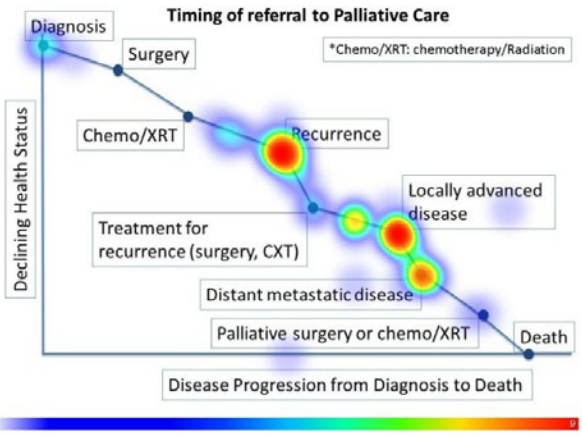

Figure: Heatmap representing timing of referral to palliative care. HNC surgeons were asked to mark along the line (that represents disease progression of a HNC patient) to indicate when they believe palliative care consultation should occur.

AHNS-072: ASSOCIATION OF NEUTROPHIL-TO-LYMPHOCYTE RATIO DYNAMICS AND OUTCOMES WITH IMMUNE CHECKPOINT INHIBITION IN HEAD AND NECK SQUAMOUS CELL CARCINOMA

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Background: While immune checkpoint inhibitors (ICI) are capable of producing long-lasting anti-tumor responses in head and neck squamous cell carcinoma (HNSCC), this occurs in only a minority of patients. Predictive biomarkers are therefore necessary to identify patients who are likely to respond to treatment. The ideal biomarker would be inexpensive, readily available, and allow for monitoring of treatment effect. The Neutrophil-to-Lymphocyte Ratio (NLR) has been shown to correlate with response of PD-1/PD-L1 inhibitors in several tumor types, and NLR dynamics on treatment have shown to be informative in lung and renal cancer, specifically. However, NLR dynamics on treatment have not been investigated in HNSCC.

Methods: A single institution retrospective review identified patients with HNSCC initiating treatment with ICI between March 2014 and December 2017. Inclusion criteria were checkpoint naïve patients with R/M HNSCC. Patients receiving additional modalities such as surgery or radiation concomitantly were excluded. Values for absolute neutrophil count (ANC) and absolute lymphocyte count (ALC) were recorded and the NLR was calculated (ANC/ALC) for 3 time points: baseline (NLR1), 3-5 weeks into therapy (NLR2), and 7-10 weeks into therapy (NLR3). Dynamic change in NLR from baseline was also calculated (NLR1/NLR2; NLR1/NLR3). Patients were considered NLR low (favorable) if < 7, as described by Ho et al. Response was determined by RECIST 1.1. Determination of stable disease required at least 6 months without progression (SD_6) or switching to an alternative cancer therapy. Kaplan-Meier and box plots were tested by Log-Rank and unpaired two-tailed t-test, respectively. Cox Probability-Hazard model was controlled for age, race, smoking, HPV status, immunotherapy regimen, ECOG PS, anatomic location and number of prior lines of systemic therapy.

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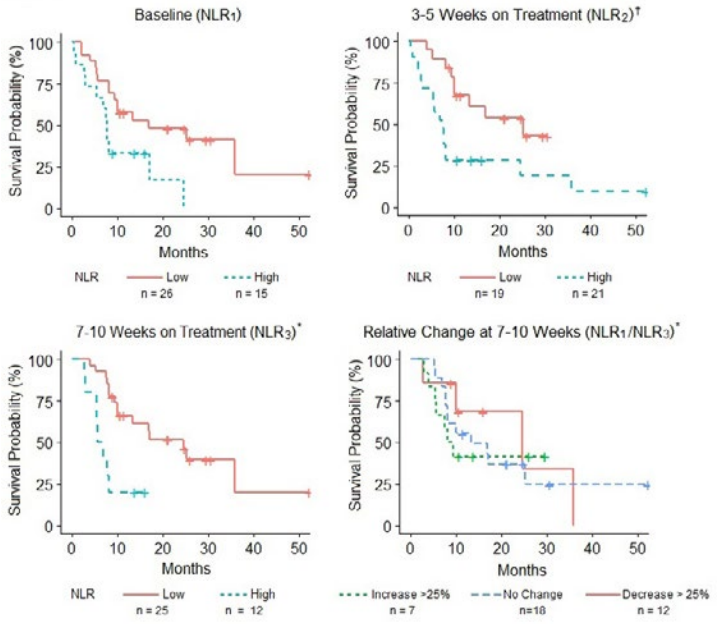
Results: 41 patients met inclusion criteria. Overall response rate (ORR = CR+PR) was 24.4%, and disease control rate (DCR = CR+PR+ SD_6) was 46.3%. Baseline NLR < 7 was associated with increased overall survival (OS) and progression free survival (PFS) with ICI therapy (p = 0.018, and 0.046 respectively). Baseline NLR < 7 also associated with increased DCR, however the results did not reach statistical significance (p = 0.063). In multivariate analysis, baseline NLR < 7 was independently associated with improved OS (p = 0.044), but not PFS (p = 0.53). Dynamic change in NLR at 3-5 weeks (NLR1/NLR2) and 7-10 weeks (NLR1/NLR3) was not associated with improved OS (p = 1.00 and 0.87, respectively), PFS (p = 0.6 and 0.52) or DCR (p = 0.72 and 0.38). Of the 41 patients, 23 (56%) went on to receive additional therapies.

Discussion: Neutrophil-to-Lymphocyte Ratio (NLR) < 7 at outset of therapy with immune checkpoint inhibition is associated with significantly increased OS in R/M HNSCC. We asked whether monitoring NLR dynamics, during treatment, might further predict benefit - our hypothesis being that longitudinal change in NLR should track with increasing response. Our findings did not support this hypothesis, however. It may be the case, therefore, that NLR is a surrogate for fitness and overall prognosis, rather than response to immunotherapy, per se.

Figure 1



†NLR2 unavailable for 1 patient, no CBC during required window
*NLR3 unavailable for 4 patients due to disease progression

Table 1

Immunotherapy	Number (%)	NLR < 7	NLR ≥ 7	Overall Response (CR+PR)	Disease Control (CR+PR+SD_6)
Monotherapy	20 (48.8)	14	6	2	8
Nivolumab	13 (31.7)	8	5	2	5
Pembrolizumab	6 (14.6)	5	1	0	3
Cemiplimab	1 (2.4)	1	0	0	0
Combination	21 (51.2)	12	9	8	11
Nivolumab + Lirilumab	7 (17.1)	5	2	4	5
Nivolumab + Lirilumab + Ipilimumab	1 (2.4)	1	0	0	0
Nivolumab + Varlilumab	6 (14.6)	3	3	1	2
Nivolumab + anti-LAG3	1 (2.4)	1	0	1	1
Nivolumab + anti CCR4	1 (2.4)	0	1	1	1
Pembrolizumab + anti-Galectin-3	2 (4.9)	1	1	0	1
Durvalumab + Tremelimumab	3 (7.3)	1	2	1	1

AHNS-073: THE EFFECT OF METFORMIN ON IMMUNE INFILTRATE IN HEAD AND NECK SQUAMOUS CELL CARCINOMA

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Introduction: The tumor microenvironment of head and neck squamous cell carcinoma (HNSCC) is a metabolically complex matrix in which cancer cells interact with metabolically dysregulated stromal support cells and infiltrating immune cells. It is poorly understood how the metabolic environment in tumors affects immune cell infiltration and function. Metformin affects cell metabolism by inhibiting mitochondrial oxidative phosphorylation complex I, activating of AMP-activated protein kinase (AMPK), and inhibiting the mammalian target of rapamycin (mTOR). Here we evaluated effects of Metformin on immune cell infiltrates in HNSCC primary tumors and metastatic lymph nodes.

Methods: A group of 37 primary tumor specimens from patients treated with metformin in the neoadjuvant setting were compared to 52 matched control specimens from treatment-naïve patients. Among the 37 Metformin-treated patients, 7 patients had nodal metastases that were studied. These nodal specimens were compared to 23 specimens from treatment-naïve patients. Immune profiling of the TME and lymph nodes was carried out by immunohistochemical detection of FOXP3 (Forkhead Box P3) expressed in regulatory T cells, and CD8 expressed by effector T cells. Digital image analysis was performed using Aperio software to quantify staining intensity and co-localization.

Results: Metformin pretreatment was associated with fewer intratumoral $FOXP3^+$ cells when compared to that of primary control specimens ($p<0.0001$), but did not significantly affect $FOXP3^+$ cells in metastatic lymph nodes. By contrast, Metformin treatment did not significantly affect $CD8^+$ cells in either primary or lymph node specimens.

Conclusion: Metformin treatment reduces expression of FOXP3 by tumor infiltrating T cells. This observation is consistent with the hypothesis that Metformin may favorably impact HNSCC immune responses by reducing regulatory T cells expressing FOXP3. Whether this effect is due to reprogramming of tumor and/or immune cell metabolism requires further investigation.

AHNS-074: THE IMPACT OF NEOADJUVANT PRE-SURGICAL PD-1 INHIBITION ON THE IMMUNE PHENOTYPE IN PATIENTS WITH ORAL CAVITY CANCER.

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Purpose/Objectives: Squamous cell carcinoma of the head and neck (HNSCC) is the sixth most common neoplasm in the world and despite advances in treatment, the 5-year survival remains approximately 50%. Given the poor prognosis observed in OCSCC there continues to be a need for new therapeutic strategies. A potential approach that has gained interest is combining the benefits of a neoadjuvant treatment strategy with immunotherapy. Currently, we have an ongoing investigator-initiated Phase II Trial of Nivolumab, As a Novel Neoadjuvant Pre-Surgical Therapy for Locally Advanced Oral Cavity Cancer (NCT03021993). The primary objective of the study is to determine pathological overall response rate. In an effort to identify biomarkers of

response to therapy, we have expanded TILs and collected peripheral blood from patients with OCSCC following Nivolumab treatment.

Materials/Methods: This is an interim analysis of a Phase II investigator initiated trial of Nivolumab as a neoadjuvant pre-surgical therapy for patients with locally advanced OCSCC. The primary efficacy endpoint is objective response rate defined as pathologic complete response + pathologic partial response. Secondary endpoints are to determine changes in the memory phenotype following PD-1 inhibition and correlate these changes to response to therapy.

Results: The trial opened in May 2017 with an anticipated accrual of 17 patients. To date we have enrolled 9 patients. We have observed an overall response rate of 57% (4 of 7 patients) and two additional patients are currently on trial. Additionally, we have been able to expand TIL in 85% (6 of 7 patients) following PD-1 inhibition. Preliminary data suggest response to PD-1 blockade is associated with an increase in the central memory phenotype within TIL particularly in the CD8+ population. In contrast, non-responders demonstrate a higher CD8+ terminal effector and CD4+ Treg populations. Analysis of the peripheral blood revealed in a significant increase in the CD8+ population following PD-1 inhibition in responders. Further analysis revealed increased expression of IFN-g and Granzyme B CD8hiCD3+ in the responder group which was not observed in the non-responders.

Conclusions: Nivolumab as a neoadjuvant pre-surgical therapy for patients with OCSCC appears to be well tolerated and efficacious. Response to PD-1 inhibition may be associated with an increase in the central memory phenotype in the CD8+ population in TIL and increase in activated T cells in the peripheral blood.

BEST OF RECONSTRUCTIVE ABSTRACTS

AHNS-075: PROGNOSTIC FACTORS ASSOCIATED WITH ACHIEVING TOTAL ORAL DIET FOLLOWING OSTEOCUTANEOUS MICROVASCULAR FREE TISSUE TRANSFER RECONSTRUCTION IN THE HEAD AND NECK

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Background: Osteocutaneous microvascular free tissue transfer (OMFTT) is the gold standard in reconstruction of large bony defects of the head and neck, usually incurred due to oncologic or traumatic etiologies. Due to the relatively low incidence of procedures, loss to follow up from disease-related mortality, and varying donor sites for reconstruction, literature on swallow outcomes has been limited. Our objective was to describe the rate of total oral diet (PO) achievement in this patient population, and to identify possible pre-, intra-, and post-operative factors associated with achievement following OMFTT.

Methods: Retrospective review of consecutive patients undergoing OMFTT reconstruction of head and neck defects between 1/2010 to 3/2018 was conducted at two tertiary academic centers. Independent variables collected included sociodemographics, Head and Neck Charleson comorbidity index (HNCCI), treatment-related characteristics including surgical details and any adjuvant therapies, post-operative complications, and dental rehabilitation rendered. Time to achievement of total oral diet was analyzed and plotted using the competing risk method, where death was treated as a competing risk. A subdistribution hazard model was performed to include all individual significant variables into a single multivariable model for competing risk analysis. All analyses were conducted using SAS 9.4 (SAS Institute Inc., Cary, NC, USA).

Results: 260 patients underwent OMFTT during the study time period, 11 of which were excluded due to lack of follow up of at least 6 months or perioperative death. 68% of patients were male, with a median age of 60 years. Overall, 61.1% of patients achieved a total PO diet post-operatively. While increased hospital length of stay, high HNCCI, normal or low BMI, smoking, and history of prior radiation therapy were found significant on univariate analysis, multivariate analysis identified only concurrent need for glossectomy ($p=0.0239$), N2 disease ($p=0.001$), postoperative fistula formation($p=0.011$), and preoperative G-tube use ($p<0.001$) to be independently significantly associated with inability to achieve total oral diet. Patients who underwent dental rehabilitation by means of denture prosthetic or dental implants ($p=0.0063$) were significantly more likely to achieve total oral diet postoperatively than those who did not.

Conclusion: While numerous risk factors were found associated with failure to achieve total PO diet on univariate analysis, multivariate analysis identified only composite resection requiring glossectomy, N2 disease, postoperative fistula formation, preoperative G-tube use, and lack of post-treatment dental rehabilitation to have independent associations. Further studies are warranted to increase our understanding of this patient population, including prospective studies on dental restoration and implementation of more objective measures of swallow function.

AHNS-076: MORTALITY AND MORBIDITY IN PATIENTS 80 YEARS AND OLDER UNDERGOING MAJOR HEAD AND NECK ABLATION AND RECONSTRUCTION – A MULTI-INSTITUTIONAL STUDY

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Objective: Determine complications and mortality rates in patients 80 years and older undergoing major head and neck surgery with pedicled or free flap reconstruction. Identify patient and procedure factors associated with postoperative complications, mortality and functional status. This data can assist in pre-operative patient counseling and surgical planning in this unique and growing patient population.

Methods: Retrospective, multi-institutional, cohort study of patients 80 years and older who underwent pedicled or free flap reconstruction between 2015 and 2017.

Results: From 7 academic institutions, 129 patients met inclusion criteria. Median age was 83 years (range 80-98). 105 patients underwent a free-flap, 23 underwent a pedicled flap, and 1 underwent a combined free flap and pedicled flap. Flap failure rate (partial or total) was 15% for pedicled flaps and 12% for free flaps. 109 patients (84%) were reported as functionally independent prior to surgery. The rate of 30-day serious complication was 61%. 90-day mortality was 11%. 12% of patients undergoing pedicled flaps underwent additional surgeries in the post-operative period while 36% of patients undergoing free flaps underwent additional

surgeries. After adjusting for institutional effect, variables associated with increased 30-day serious complication were flap failure (OR 2.5, 1.18-5.43), American Society of Anesthesiologists (ASA) score ≥4 (OR 2.25, 1.09-4.63), and additional surgeries (OR 1.85, 1.31-2.62). Variables associated with 90-day mortality were age (OR 1.23 with each additional year, 1.13-1.34), ASA score ≥4 (OR 13.5, 1.47-123.99), renal disease (OR 12, 3.1-46.4), pre-operative weight loss (OR 2.45, 1.47-5.13), and flap failure (OR 4.12, 1.25-13.63). Higher body mass index (BMI) was protective (OR 0.96, 0.92-0.99). Type of reconstruction (free flap vs. pedicled flap), length of operating time, frailty (overall Modified Frailty Index - MFI) score and pre-operative dysphagia were not significant. Of the 78 patients within the cohort who were reported as functioning independently pre-operatively and who were alive at 90-days post-operatively, 54 retained independent functional status at 90-days post-operatively while 24 became functionally dependent (31%). Length of stay (OR 1.12, 1.01-1.25) and additional surgeries (OR 3.15, 1.66-5.98) were associated with loss of functional independence at 90-days post-operatively.

Conclusion: Rates of 30-day serious complications and 90-day mortality in 80+ year old patients undergoing major head and neck surgery are reported herein. Type of flap (free flap vs. pedicled flap) was not significant for either outcome. However, flap failure, ASA score ≥4, and additional surgeries were associated with serious complications and/or mortality. Patients undergoing free flap reconstruction had a 3-fold higher rate of undergoing additional surgeries. Approximately one-third of patients who were functionally independent prior to surgery were functionally dependent at 90-days post-operatively. This data can guide pre-operative counseling in patients 80 years and older who are considering major head and neck surgery.

SCIENTIFIC SESSION 10 – VALUE II

AHNS-077: IDENTIFICATION OF HIGH-COST PATIENTS AFTER HEAD AND NECK CANCER SURGERY

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OBJECTIVE: Proposed value-based care models, such as bundled payments, will place providers at greater risk for financial outcomes. It is important for providers to identify which patients are at high-risk for increased spending so that they can be more aggressively managed during the global period. Our goal is to use surgical episodes of care to identify high-cost head and neck surgical patients and determine drivers of cost and outcomes in this group.

METHODS: We identified 3,459 adult patients who were admitted post-operatively after head and neck cancer surgery in the Optum claims database from 2003 to 2016. We measured episode of care costs from the index hospitalization through 30 days after discharge. We used Kaplan-Meier analysis, multivariate Cox proportional hazards regression, and multivariable linear regression to determine factors associated with high costs.

RESULTS: Our patients had a mean age of 61.7 years (interquartile range [IQR], 54-71 years) and a mean non-malignancy Charlson comorbidity index (CCI) of 1 (IQR, 0-2). The median cost of a 30-day episode of care after head and neck surgery was $37,682 (IQR, $22,995-$59,109). Patients in the top cost decile were responsible for 31.7% of the aggregate total cost and their surgical episodes cost nearly 15-fold more than patients in the lowest cost decile and over 3-fold more than the overall median cost. The cost variability was driven by the index hospitalization costs more than post-acute care costs. The highest cost patients were more likely to be younger patients and have multiple comorbidities than the lower cost patients (24.6% vs 11.9% were ≤60 years and CCI≥1, P< .001). We then created groups of patients based on age and CCI: 947 young healthy patients (≤60 years, CCI<1), 667 young multimorbid patients (≤60, CCI≥1), 525 older healthy patients (>60, CCI<1), and 1320 older multimorbid patients (>60, CCI≥1). Compared with young healthy patients, older multimorbid patients had similar costs (odds ratio [OR], 0.91; 95% confidence interval [CI] 0.61-1.35), but young multimorbid patients had twice the odds of being in the highest cost decile (OR, 1.94; 95% CI, 1.18-3.21). Young multimorbid patients generated $10,588 more in total episode costs than their healthy counterparts (P< .001). In terms of quality outcomes, the young multimorbid patients had decreased 5-year overall survival relative to their healthy counterparts (61.6% vs 74.6%, P< .001). These patients also had the highest readmissions rate (12.9%) out of all the groups and was nearly double that of young healthy patients (7.2%).

CONCLUSIONS: In this privately insured cohort, younger multimorbid patients are the most likely patients to be in the highest decile of costs and are responsible for nearly a third of total costs, and have worse survival and quality outcomes. This suggests that targeting these high-cost young multimorbid patients for cost-saving strategies would be beneficial in our head and neck cancer surgical cohort.

AHNS-078: EVALUATION OF REASONS FOR NCCN GUIDELINE NON-COMPLIANCE IN ADVANCED STAGE HEAD AND NECK CANCER

Philip R Brauer, BA, Elliot Morse, BS, Joseph Earles, MD, Saral Mehra, MD, MBA; Yale School of Medicine

Importance: The reasons for non-compliance with National Comprehensive Care Network (NCCN) clinical practice guidelines and their prognostic value for head and neck cancer (HNC) have yet to be investigated.

Objective: To describe patient and physician reasons for non-compliance with NCCN head and neck cancer guidelines and the effects of these factors on overall survival

Design, Setting, and Participants: This cross-sectional retrospective analysis used the National Cancer Database to identify 113,967 stage III and IV non-metastatic HNCpatients from January 1, 2004 to December 31, 2013. The location of the primary malignancy determined site-specific NCCN clinical practice guideline compliance. Non-compliant patients were classified by the reason for non-compliance: treatment contraindicated due to patient risk factors (PRF), recommended treatment was refused (RTR), recommend treatment was non-compliant (RTN), and administered treatment was non-compliant (ATN).

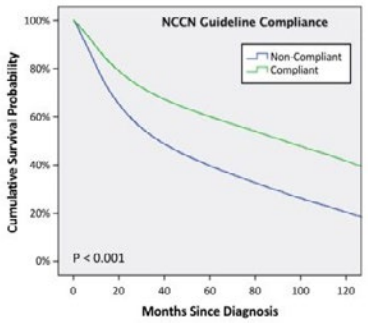
Main Outcomes and Measures: The difference in risk of death between the reasons for non-compliance as determined by a multivariate cox proportional hazard adjusted for clinical, demographic, and facility factors; the factors predictive of reasons for non-compliance were analyzed with a multinomial logistic regression model.

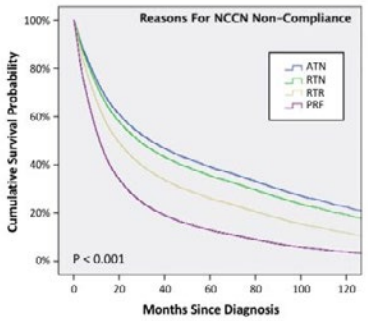
Results: The analytic patient sample totaled 113,967 individuals (77% male; median [range] age, 59 [19-90] years) with 78,525 (69%) of patients being NCCN guideline compliant. Compliant patients had a significantly lower risk of death compared to non-compliant patients (hazard ratio [HR], 0.55 (0.54-0.56), p< 0.001). Within

non-compliant patients, PRF were associated with the highest hazard ratio (HR, 2.18 (2.00-2.37),p< 0.001), followed by RTR (HR, 1.43 (1.33-1.54),p< 0.001), and then RTN (HR, 1.10 (1.03-1.18),p= 0.003) relative to ATN. Treatment at an academic/research facility was associated with a lower probability of RTR (odds ratio [OR], 0.75 (0.60-0.94) p = 0.014), PRF (OR, 0.66 (0.51-0.86) p = 0.002), and RTN (OR, 0.74 (0.61-0.90) p = 0.002).

Conclusions and Relevance: A large proportion of advanced stage HNC patients received non-compliant treatment. Receipt of non-compliant treatment was associated with decreased overall survival, and this relationship was more strongly associated in those not given appropriate treatment due to PRF, RTR, and RTN. Treating advanced stage HNC patients at academic/research facilities may significantly improve survival for patients not compliant with NCCN clinical practice guidelines.

Adjusted Survival Curves for NCCN Guideline Compliance and Reasons for Non-Compliance





AHNS-079: DERIVING HEALTH UTILITY SCORES FROM HEAD AND NECK CANCER QUALITY OF LIFE INSTRUMENTS: MAPPING UWQOL AND EORTC QLQ-H&N35 ONTO EQ-5D AND HUI-3 INDICES

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Importance: Head and neck cancer trials frequently incorporate quality of life instruments (QoL) but rarely report patient utility. Health State Utilities are a measure of patient preferences for particular health states and are an essential part of cost-utility analysis. They are an increasingly important consideration in the context of value-based care.

Objective: To develop mapping functions that use disease specific QoL scores [University of Washington Quality of Life Questionnaire (UWQoL) the European Organization for Research and Treatment of Cancer Quality of Life Questionnaire and the Head and Neck Cancer Specific Module (EORTC QLQ-C30 & HN-35)] to approximate health utility scores [the EQ5D and the Health Utilities Index Mark 3 (HUI-3)].

Design: In a cross-sectional study, outpatients with head and neck squamous cell carcinomas of the aerodigestive tract (HNSCC) completed the EORTC QLQ-C30 & HN-35, UWQoL, EQ5D and the HUI-3. Results of the EORTC QLQ-C30 & HN-35 and UWQoL were mapped onto both EQ5D or HUI-3 scores using ordinary least squares regression (OLS) models. Stepwise selection with Akaike Information Criterion were used to reduce the full model and examine which dimensions best predicted a patient's utility score. The predictive power of the model was assessed using 10-fold cross validation.

Setting: Outpatient oncology clinics at the Princess Margaret Cancer Centre from November 2017 – April 2018.

Participants: Patients with HNSCC were recruited. (hypopharynx, larynx, nasopharynx, oral cavity, and oropharynx). All patients who were either undergoing treatment or being seen in follow-up. Participants with metastatic disease and non-English speakers were excluded from the study.

Exposures: Head and neck cancer, QoL and health measures

Main Outcomes and Measures: We assessed performance of the mapping model through adjusted R-squared analysis. Mean square error was calculated to measure deviation of the predicted from the actual utility value.

Results: A total of 209 patients were recruited. Median age of the sample 63. The most common cancer subsites were oral cavity (35%) and oropharynx (25%). Using regression analysis, the mapping function of EORTC scores onto EQ5D scores performed best (adjusted R-squared = 0.73, RMSE = 0.065, 10-fold cross-validation RMSE = 0.067). In total, 13 of the 33 dimensions were included in the final model. The estimated mean utility score was 0.84 (SD 0.11), which perfectly matched the observed mean utility score in the cross-validation study. The mapping function of UWQOL scores onto EQ5D scores also performed well (adjusted R-squared =0.63; RMSE = 0.073,, 10-fold cross-validation: RMSE= 0.076). Conversely, the EORTC and UWQoL mapped less well to the HUI-3 (EORTC: adjusted R-squared =0.57; RMSE = 0.16, 10-fold cross-validation: RMSE= 0.17; UWQoL: adjusted R-squared =0.37; RMSE = 0.198, 10-fold cross-validation: RMSE= 0.200 respectively).

Conclusions and relevance: Several of the mapping algorithms developed have good predictive validity, and therefore, enable researchers to translate head and neck cancer-specific health-related quality of life scores to health utility scores.

AHNS-080: INSURANCE COVERAGE CHANGE AND STAGE AT DIAGNOSIS AMONG NONELDERLY PATIENT WITH HEAD AND NECK SQUAMOUS CELL CARCINOMA AFTER THE AFFORDABLE CARE ACT – NATIONAL CANCER DATABASE SURVEY

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Objectives: To examine the change in percent uninsured and if

there is change in T-stage, N-stage and overall-stage among non-elderly patients with newly diagnosed Head and Neck Squamous Cell Carcinoma (HNSCC) after the Affordable Care Act (ACA).

Methods: National Cancer Database (NCDB) was utilized for this study. Patients aged 40 – 64 years were divided between 2004 – 2009 (pre-ACA implementation) and 2014 – 2015 (post-ACA expansion) time periods. Patients were further stratified between areas where the ACA expansion had been implemented and areas where it was not implemented. A quasi experimental difference-in-difference study design was undertaken. Absolute and relative percentages were calculated. Significance was determined as $p < 0.05$.

Results: A total of 15037 patients met the inclusion criteria: 5663 patients were in the Pre-ACA, expansion region cohort; 4374 patients were in the Pre-ACA, non-expansion region cohort; 2778 patients were in post-ACA, expansion region cohort; and 2222 patients were in post-ACA, non expansion region cohort. Number of patients. Between the pre-ACA and post-ACA periods, there was increased Medicaid coverage in patients residing in expansion region compared to non-expansion region (APC: 6.9%), while a decrease was noted in those with private (APC: -3.58%) and uninsured (APC: -3.31) patients. Similar comparison for T-stage and N-stage revealed a decrease in patients presenting with T4 disease (APC: -3.38%) and N2c disease (APC: -3.44%). No differences were noted for percentage of patients presenting with metastatic disease.

Conclusions: With the implementation of ACA expansion, there is increased Medicaid coverage, suggesting improved access to care for HNSCC patients. This corresponded to decreased percentage of patients presenting with late T- and N- stage disease.

AHNS-081: ASSESSING THE VALUE EQUATION FOR OLDER PATIENTS RECEIVING RADIOTHERAPY WITH OR WITHOUT CISPLATIN OR CETUXIMAB FOR LOCOREGIONALLY-ADVANCED HEAD AND NECK CANCER

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Objectives: Value is often described as a function of quality, outcomes, and cost, and in the treatment of stage III-IVB head and neck cancer (HNC) in older patients, assessment of this value equation is complex. While providers frequently treat with radiotherapy (RT)-cetuximab over RT-only or RT-cisplatin because of a perceived survival benefit and since it is better tolerated, scant data exist on the elements of value in this older patient population. In this study, we measured these three aspects of value (quality, outcomes, and cost) in patients aged 65+ receiving RT-only, RT-cisplatin, or RT-cetuximab for locoregionally-advanced HNC.

Methods: We retrospectively identified records from the Surveillance, Epidemiology, and End Results Program (SEER)-Medicare outcomes-claims database of patients older than 65 years from 2006-2013 diagnosed with stage III-IVB HNC and identified chemo- and radiotherapy treatment regimens. We evaluated outcomes by analyzing survival using propensity-score-matched Cox proportional hazards models, care quality by measuring 90-day emergency department (ED) visit and inpatient admission rates, and costs by assessing 90-day total Medicare spending.

Results: We identified 1,084 HNC patients meeting our inclusion criteria. In patients aged 65+, improved OS was observed in patients receiving RT-cisplatin [hazard ratio of mortality (HR) 0.71, 95% confidence interval 0.53-0.95] compared to those receiving RT-only. This benefit was not seen in those receiving RT-cetuximab (HR 1.08, 0.85-1.36). Among patients aged 75+, no significant survival difference was seen between those receiving RT-cisplatin (HR 0.69, 0.43-1.11) and RT-only, but those receiving RT-cetuximab were observed to have significantly lower survival than RT-only patients (HR 1.37, 1.01-1.87). Care quality was evaluated in the first 90 days after treatment start. RT-cisplatin patients aged 65+ had a 70% [adjusted incidence rate ratio (IRR) 1.70, 1.30-2.24] and RT-cetuximab patients had a 31% higher incidence rate (IRR 1.31, 1.00-1.71) of ED visits overall than RT-only patients. Among those aged 75+, RT-cisplatin patients had over twice the rate (IRR 2.12, 1.36-3.32) and RT-cetuximab patients had a 66% higher rate of ED visits (IRR 1.66, 1.14-2.43) when compared to RT-only patients. There were no significant differences between treatment groups seen in inpatient admission rates for patients aged 65+, however in the 75+ subset, patients receiving RT-cisplatin had twice the rate of admissions (IRR 2.04, 1.26-3.33). This was not observed in patients aged 75+ receiving RT-cetuximab (IRR 1.02, 0.67-1.56). On average, Medicare spending in the 90 days after treatment start for patients receiving RT-cetuximab was $33,575 ($32,536-$34,615) compared to $21,478 ($20,727-$22,229) for RT-cisplatin and $16,927 ($15,832-$18,022) for RT-only.

Conclusions: Adding cetuximab to RT did not appear to improve survival, while significantly increasing cost. However, unlike with RT-cisplatin, use of RT-cetuximab did not show worse performance on inpatient admissions, a quality metric recognized by Medicare. Assessment of care value in this setting is complex and requires balancing the relative importance of treatment complications with cost and outcomes. This has important implications for how we assess value for HNC patients, and composite metrics are needed that assess quality in the context of overall survival and treatment cost.

AHNS-082: SOCIOECONOMIC AND DEMOGRAPHIC VARIATION IN INSURANCE COVERAGE AMONG HEAD AND NECK CANCER PATIENTS AFTER THE AFFORDABLE CARE ACT

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INTRODUCTION: Head and neck cancer (HNC) patients without insurance have poorer survival outcomes and present at later stages of disease compared to those who are insured. The Patient Protection and Affordable Care Act (ACA) has expanded insurance coverage in the United States, significantly increasing access to care for millions of people. There is a limited understanding of how the ACA may have impacted insurance coverage among HNC patients, particularly across different socioeconomic and demographic groups. Examining potential disparities in insurance rates after ACA coverage expansions may inform future policy and community-level interventions to increase equity in access to care. The objective of this study is to assess changes in insurance coverage across socioeconomic and demographic subgroups of HNC patients before and after implementation of the ACA.

METHODS: The National Cancer Database (NCDB) was queried for data on 18-74 year-olds diagnosed with a primary head and neck cancer between 2011 and 2015. Approximately 70% of all

cancer diagnoses in the United States are captured by the NCDB. We evaluated changes in rates of uninsured HNC patients between 2011-2013 (pre-ACA) and 2014-2015 (post-ACA) using linear probability regression models and adjusted for covariates, including age, race, sex, rural/urban residence status, county-level income and education, and anatomic subsite. Our analyses were stratified by socioeconomic and demographic factors, and variability by these factors was quantified using a regression model modified to include an interaction term between time period (pre- or post-ACA) and the demographic or socioeconomic variables.

RESULTS: A total of 123,200 HNC cases were identified in the pre-ACA (n=72,035) and post-ACA (n=51,165) years and there were no significant differences noted in population characteristics. There was a significant decrease in the overall rate of uninsured HNC patients in the post-ACA implementation period (-2.68% Percentage Points [PP]; 95% CI = -2.93 to -2.42, p <0.001). Female HNC patients experienced a greater decrease in uninsured rate compared to males (-0.72 PP, 95% CI = -1.3 to -0.14, p <0.015). Compared to those aged 18-34 (-5.12 PP, 95% CI = -7.06 to -3.18, p<0.001), HNC patients in older age groups experienced significantly smaller decreases in uninsured rates, particularly those aged 50-64 (-3.52 PP, 95% CI = -3.91 to -3.14, p <0.001 and 65-74 (-0.24 PP, 95% CI = -0.45 to -0.03, p<0.001). There were no significant differences in post-ACA changes in the rates of uninsured HNC patients in rural versus urban locations (p=0.604), across racial/ethnic groups (p=0.203), county income levels (p=0.108), or county education levels (p=0.756).

CONCLUSION: The association of the ACA with changes in insurance coverage across socioeconomic and demographic subgroups of HNC patients is not well characterized. Our data demonstrate a significant reduction in the overall rate of uninsured HNC patients after implementation of the ACA. Female HNC patients and those who are younger may have experienced a greater increase in access to care in the post-ACA era compared to HNC patients who are male or belong to older age groups.

AHNS-083: SURGICAL MARGINS IN SALIVARY MALIGNANCY: WHEN IS NEAR ENOUGH, GOOD ENOUGH?

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Introduction

The variety of mucosal and parenchymal tissue environments in which salivary gland malignancies occur has made surgical margins investigation problematic; thus analytic representation in the literature is limited. This study scrutinizes the influence of surgical margin status on oncological outcomes and adjuvant therapy for patients with salivary gland carcinomas.

Method

Eight hundred eighty-six patients with salivary gland carcinoma, treated surgically at Memorial Sloan Kettering Cancer Center between 1985 and 2015 were identified. With appropriate institutional approval, a retrospective chart review was performed. Surgical margins and histologies from pathology reports were recorded. Margins were classified as negative (>5mm), close (≤5mm), and positive (involved). Individual histological subtypes were classified in three risk groups: low, intermediate and high. Survival outcomes were calculated using the Kaplan-Meier method. Multivariate analysis was performed using Cox proportional hazards model.

Results:

Of the 886 patients identified, 52% were female, median age of diagnosis was 56 (range 6-98). Forty-nine percent of tumors originated from major salivary glands and 51% from minor. The most frequent histologies were mucoepidermoid carcinoma (35%) and adenoid cystic carcinoma (21%). Excluding 35 patients with unknown margin (4%), rates of margin positivity were not different between minor and major salivary gland tumors (p=0.169). Positive surgical margins were identified in nearly a third of cases (30%) with the nasal/paranasal sinuses and trachea being the subsites most susceptible to incomplete resection. Close margins were identified in 24% patients. Adjuvant treatment was administered in 24% of patients with negative margins, compared to 47% and 73% of those with close and positive margins, respectively. With a median follow up of 57 months, the 5-year disease specific survival (DSS) was 92% for negative, 80% for close and 78% for positive margins (p<0.001). Local recurrence free survival (LRFS) for negative, close and positive margins was 95%, 89%, and 83%, respectively (p<0.001). In patients with high risk histologies, positive and close margins were correlated with a significantly poorer DSS at 5 years, 49% for both, compared with 73% for those with negative margins (p=0.013).Subgroup analysis was performed for patients with close margins. Post-operative radiotherapy (PORT) in low-risk patients was not associated with improved local control (5-year LRFS 96% versus 94%, p=0.879). However, in the intermediate- and high-risk histology subtypes, patients receiving PORT showed superior short-term local control.

Conclusion

Patients with either close or positive surgical margins are at increased risk for poorer local control and survival. The individual pathology risk group must be considered when discussing adjuvant therapy in patients with close margins.

BEST OF SALIVARY ABSTRACTS

AHNS-084: THE ROLE OF ELECTIVE NECK DISSECTION IN CN0 PATIENTS WITH HIGH-GRADE PAROTID CANCER AMONG A HOSPITAL-BASED NATIONAL COHORT, 2004 – 2013.

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BACKGROUND: Occult metastasis varies widely from 12 to 48% among patients with cN0, high-grade parotid carcinoma. Current treatment paradigms include adjuvant radiation to the ipsilateral neck regardless of cN0 or pN0 staging. Controversy arises as surgeons decide whether or not to perform ipsilateral elective neck dissection (END) in cN0 patients as it is unclear if neck dissection improves survival. Moreover, occult metastasis is much higher than regional recurrence would predict implying that radiotherapy is an effective method of managing regional metastasis. Thus, we sought to evaluate the association between neck dissection and survival among cN0 patients with high-grade parotid cancer.

METHODS: This is a retrospective study of the National Cancer Database that included adult patients with clinically N0, high-grade (ICD-O-3 grade 3 or 4), parotid carcinoma diagnosed between 2004 and 2013. Survival analysis was used to compare

neck dissection versus no neck dissection when controlling for additional covariates.

RESULTS: After exclusion criteria, 1,547 patients remained. The median follow-up time among all patients was 36 months. A total of 578 patients died and 795 were alive at the conclusion of the study interval with 174 lost to follow-up. A total of 1,094 patients underwent neck dissection and 453 did not. Among patients who underwent neck dissection, <1% yielded 0 nodes, 62% yielded 1-17 nodes, and 38% yielded 18 or more nodes. Occult metastasis was identified in 28% of patients. After adjusting for confounders, we found evidence suggesting that END may have an effect on survival in the first two-to-four years following surgery, but that its effect on survival wanes by five years following surgery. When controlling for confounding, we found that 67.3% of patients would survive three years were all patients to receive END (CI: 64.4, 70.2), while 62.7% of patients would survive three years were no patients to receive END (CI: 58.2, 67.2; **Figure 1**). The difference in these survival probabilities is 4.6% (CI: -0.5, 9.6; p=0.072). On the other hand, 51.8% of patients would survive five years were all patients to receive END (CI: 48.6, 55.0) compared to 51. 5% of patients that would survive five years were no patients to receive END (CI: 46.9, 56.2; **Figure 1**). There was no significant difference in five-year survival probabilities.

CONCLUSIONS: Elective neck dissection may have an effect on survival in the first two-to-four years following surgery while this effect wanes by 5 years among cN0 high-grade parotid cancer patients undergoing neck dissection when controlling for confounding. In patients with cN0 high-grade parotid carcinoma, neck dissection should be reserved for select cases.

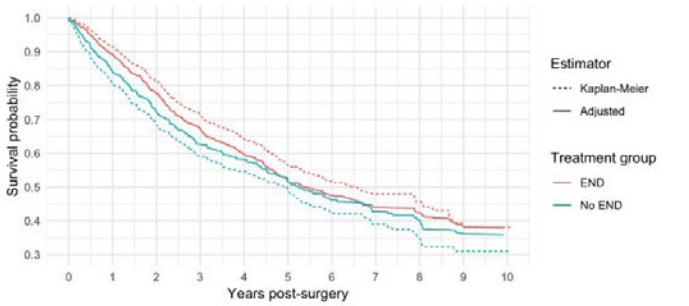

Figure 1: Survival curves for elective neck dissection (END) or not as a function of years post-surgery. The left panel displays the stratified Kaplan-Meier estimates; the right panel displays the estimates adjusting for recorded confounding.

AHNS-085: SINGLE CELL RNA-SEQUENCING REVEALS INTER-TUMORAL AND INTRA-TUMORAL HETEROGENEITY IN MYB-DRIVEN PROGRAMS IN ADENOID CYSTIC CARCINOMA

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Background: MYB overexpression is a hallmark of adenoid cystic carcinoma (ACC). Our group previously demonstrated that this overexpression may be driven by a super-enhancer translocation and, in ACC primagraft models, that MYB may drive distinct regulatory programs, including a p63 program in myoepithelial cells and a Notch program in luminal cells. Here, we sought to characterize inter- and intra-tumoral heterogeneity in ACC using single cell RNA-sequencing (scRNA-seq) to understand, in general, the full diversity of tumor and stromal cell expression programs, and more specifically, the presence of alternate MYB-driven and, potentially, MYB-independent programs within individual tumor cells.

Methods: Biopsy samples were obtained from adenoid cystic carcinoma patients undergoing surgical resection. Samples were mechanically and enzymatically dissociated to single cell suspensions, and individual CD45 negative cells were FACS sorted into 96-well plates. Library preparation was performed according to the Smart-Seq2 protocol, and sequencing was performed using an Illumina Nextseq 500.

Results: We sequenced approximately 2,000 cells from 11 ACC samples, including ten primary tumors and one lung metastasis. Using copy number variation and MYB fusion events, we reliably identified cancer cells and distinguished these from fibroblasts and endothelial cells, the predominant non-malignant cell types prevalent in our samples. Similar to analyses in oral cavity carcinoma, non-malignant cell types showed remarkable consistency in expression programs across tumors, while malignant cells demonstrated a higher degree of inter-tumoral heterogeneity. We demonstrated inter- and intra-tumoral variability in MYB expression and corresponding variability in MYB target expression. We also identified myoepithelial and luminal cancer cells, with most tumors having both subpopulations but some tumors being dominated by one of these two cell types. Finally, we demonstrated the presence of Notch in luminal cells and DLL1 on myoepithelial cells, suggesting the possibilities of paracrine Notch signaling between different tumor subpopulations.

Conclusions: Our results demonstrate that single cell RNA-sequencing is feasible in ACC, with reliable isolation and identification of cancer and stromal cells. Moreover, these results begin to define the landscape of cancer cell expression heterogeneity within these tumors, focusing on inter- and intra-tumoral variability in MYB-driven programs and, in particular, Notch signaling, with important insights that may facilitate novel therapeutic approaches for these challenging tumors of the head and neck.

SCIENTIFIC SESSION 11 – BIOMARKERS

AHNS-086: USE OF MACHINE LEARNING TO DEVELOP A CLINICAL PREDICTION MODEL FOR SURVIVAL IN ORAL CANCER

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Importance: Oral cancer (OC) is a significant public health concern in the United States and globally. Predicting OC survival through the use of prediction modeling has been underutilized, and the development of a well-constructed model would augment our ability to provide absolute risk estimates for individual patients. Artificial intelligence (AI) has been increasingly used to develop prediction models in health care with promising results, and may serve to improve our current methodology for model development.

Objective: To develop a prediction model for 5 year overall survival in patients OC using a machine learning (ML) approach and compare this prediction model to the current TNM classification system.

Design, Setting, and Participants: Retrospective cohort study of patients diagnosed or treated for OC from the National Cancer Database (NCDB) between 2004 and 2013. Patients were excluded if the treatment was considered palliative or if staging demonstrated T0 or Tis.

Main Outcomes: Primary endpoint was development and comparison of predictive algorithms for 5 year overall survival using ML and TNM classification.

Methods: Patient social, demographic, comorbidity, tumor, treatment facility, treatment type, and outcome information were obtained from the NCDB. ML software, Microsoft Azure Machine Learning Studio, was used to analyze the data. The data was split into an 80/20 distribution for training and testing, respectively. The data was explored using two-class decision forest and model hyperparameters were tuned to optimize performance. The data was scored using the test data set and permutation feature importance scores were used to determine the factors used in the model's prediction. The performance of the ML model was compared to that of the pathological TNM staging through measures of discrimination using the c-statistic, accuracy, and precision.

Results: From the cohort of 37,353 eligible OC patients, 5,471 patients were excluded due to missing clinical staging or survival information. Mean patient age was 62 years (SD= 13), 20,609 (65%) were male, and 28,263 (89%) were white. There were 17,547 reported deaths and a 5 year overall survival of 55%. The median time of follow-up was 46 months (range 0-156 months). The ML model identified insurance status, pathological and clinical T classification, age, regional positivity of lymph nodes, and education level as the most significant variables. When applied to the testing data (n=7470), the calculated c-statistic was .79 (95% CI .78 to .80), the accuracy was 72%, and the precision was 70%. In comparison, the calculated c-statistic to assess discrimination of TNM staging system was .61 (95% CI .61 to .62), the accuracy was 60%, and the precision was 59%.

Conclusions: Using ML, a survival prediction model for oral cancer was created using socioeconomic, demographic, clinical, and pathological data for 31,882 patients from the NCDB. The developed prediction model correctly predicted 5-year overall survival better than TNM pathological stage alone in all metrics. The results of this study highlight the potential impact of ML algorithms, which when applied to large patient datasets, can accurately predict important clinical outcomes and may ultimately contribute to improved patient care.

AHNS-087: TMEM16A IS A POTENTIAL BIOMARKER FOR THE DEVELOPMENT AND MALIGNANT TRANSFORMATION OF SQUAMOUS EPITHELIAL DYSPLASIA

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Importance: Head and neck squamous cell carcinoma (HNSCC) often develops from pre-invasive, histologically detectable dysplastic lesions, but the targetable molecular alterations associated with dysplasia are not well known. TMEM16A is a calcium-activated chloride channel that is overexpressed in 30% of HNSCC and has been associated with poor prognoses in this population. While it has been shown to play a role in tumor growth, metastasis, and treatment resistance, its significance in the development and progression of pre-malignant lesions has not been established.

Objective: To examine the relationship between TMEM16A expression and pathologic classification in head and neck squamous intraepithelial lesions (SILs).

Design, Setting, and Participants: We performed immunohistochemical (IHC) staining of TMEM16A in a cohort study of 43 patients whose head and neck SILs were biopsied at the University of Pittsburgh Medical Center. All tissues were obtained from the oral cavity or larynx. We then replicated these data using an animal model of dysplasia using mice treated with 4-nitroquinoline-1-oxide (4NQO) as previously described in a well-established model. We obtained normal epithelium from 8 untreated mice and SILs from 21 treated mice. IHC with rabbit polyclonal antibody was used to stain TMEM16A using a clinical-grade, CLIA-certified test.

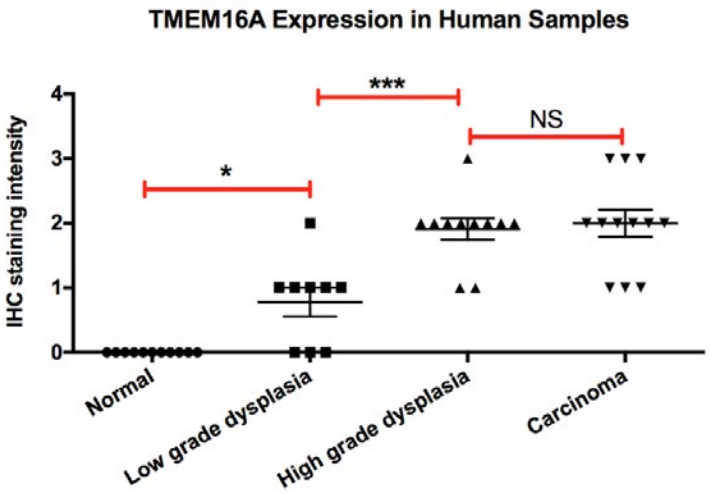
Main Outcomes and Measures: For both human and mouse samples, each SIL was assigned a pathologic classification ranging from normal epithelium to carcinoma. TMEM16A expression was quantified in all samples as staining intensity or as an H-score (staining intensity multiplied by percentage of positive cells). Student's t-tests and analysis of variance (ANOVA) were used to analyze the relationship between pathologic class and TMEM16A expression.

Results: Human SILs were classified as normal epithelium, low-grade dysplasia, high-grade dysplasia, and carcinoma. There was a statistically significant difference in TMEM16A staining intensity between these groups as determined by one-way ANOVA ($F=31.97$, $p=<0.0001$). Staining intensity consistently increased when progressing from normal epithelium to carcinoma. Staining intensity in low-grade dysplasia was significantly higher vs. normal epithelium ($p=0.0011$), high-grade dysplasia was significantly higher vs. low-grade dysplasia ($p=0.0005$), and carcinoma was significantly higher vs. low-grade dysplasia ($p=0.0009$) (figure 1). We observed similar results in the murine experiment. Murine SILs were classified as normal epithelium, mild dysplasia, moderate dysplasia, and severe dysplasia. TMEM16A staining intensity was significantly higher in mild dysplasia vs. normal epithelium ($p=0.0036$) and in severe dysplasia vs. mild dysplasia ($p=0.0022$). Among murine SILs classified as normal epithelium, staining intensity in 4NQO-treated animals was significantly higher vs. untreated animals ($p=0.0006$).

Conclusions/Relevance: In both humans and mice, TMEM16A expression increased as pathologic class progressed from normal epithelium to carcinoma. Because it has been shown that high grade/severe lesions are more likely than low grade/mild lesions to undergo malignant transformation, quantifying TMEM16A expression in pre-malignant lesions may help with risk stratification. Additionally, we found higher TMEM16A expression in normal epithelium from 4NQO-treated animals than in untreated animals, suggesting that carcinogen-induced alterations in TMEM16A expression precede architectural, clinically identifiable changes. This finding has potential implications for the development of early detection and prevention strategies moving forward.

Figure 1

ORAL PAPERS



AHNS-088: DNA SEQUENCING OF HUMAN CANCER GENES AND HUMAN PAPILLOMAVIRUS GENOMES TO CLASSIFY AND MONITOR HEAD AND NECK SQUAMOUS CARCINOMA

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Introduction: Classification of head and neck squamous cell carcinoma (HNSCC) increasingly relies on gene tests, such as human gene mutation and Human Papillomavirus (HPV) status, to inform therapy selection. Furthermore, cell free DNA levels of such tumor markers may reflect tumor burden and help monitor efficacy of therapy. We devised assays to quantify human cancer gene variants and oncogenic pathogen genomes (HPV, EBV), and we applied the assays in cancer tissue and in serial plasma specimens from HNSCC patients.

Methods: Targeted DNA sequencing (ArcherDx libraries: Solid Tumor VariantPlex and Reveal ctDNA 28, Illumina NextSeq) was applied to paraffin-embedded tumor tissue (QIAamp DNA Micro extraction kit) from 32 patients and to 34 matched plasma specimens (Promega Maxwell RSC LV ccfDNA extraction kit) at active disease or post-therapy timepoints. Results were analyzed to catalog mutations, insertion/deletions, and copy number variants in up to 67 cancer genes, levels of each pathogen per million human reads, and HPV type.

Results: Robust sequencing data was generated from biopsy, resection and plasma specimens. Cell-free HPV DNA more sensitively denoted plasma tumor markers than did human gene variants. 16 oropharyngeal cancers harbored HPV DNA in tumor tissue, of which one was HPV33 type. In matched plasmas, HPV was detected at 9/11 active cancer timepoints and at 1/5 post-treatment timepoints, with later recurrence documented in the 1 positive post-treatment plasma patient and in two other patients. Each patient's HPV16 genotype was unique to that patient, while HPV33 type was confirmed in plasma of the one known HPV33-infected tumor patient. 16 additional head and neck cancer patients lacking evidence of HPV in tumor tissue had no detectable HPV DNA in plasma.

Conclusions: Modern sequencing technology can simultaneously genotype human DNA and quantify pertinent pathogen genomes in both tissue and plasma, revealing tumor markers by which to detect residual disease after treatment, and promoting research on viral-human interactions informing response to treatment.

AHNS-089: P16 AND HUMAN PAPILLOMAVIRUS IN SINONASAL CARCINOMA

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Background: The role of human papillomavirus (HPV) in oropharyngeal squamous cell carcinoma (SCC) is well-established as a cause and prognostic indicator, and the clinical utility of p16 as surrogate marker for HPV status has been extensively described in this region. While HPV prevalence has been studied in sinonasal pathology, p16 significance and its relationship with HPV has not yet been defined nor has a link with patient outcome been established.

Objectives: Primary: We aim to determine the effectiveness of p16 as a prognostic indicator in sinonasal SCC. Secondary: We intend to evaluate p16 as a surrogate marker for HPV status in the sinonasal cavity.

Methods: Patients from 2011-2017 diagnosed with sinonasal carcinoma with available tissue were included. We performed immunohistochemistry for p16 on formalin-fixed, paraffin-embedded specimens and subsequently performed HPV RNA in situ hybridization. Demographics and outcomes were reviewed retrospectively. Statistical assessment included student's t-test, chi-square method and survival analysis using Kaplan-Meier method.

Results: Of the 47 patients, the majority were male, >50 years, and had negligible smoking history. More than two-thirds had later T stage tumors and no lymphadenopathy. All but four patients underwent surgery, with more than half receiving adjuvant treatment (n=27). We observed 70% overall and disease-free survival (DFS) at three years; nine patients died and nine recurred. 61% of tumors with p16 staining were p16-positive (p16+). P16+ patients were more likely to be younger and have negligible smoking history, whereas more than half of p16-negative (p16-) patients were current or former smokers. Compared to p16-, a smaller proportion of p16+ patients had recurrence or died. There was a statistically significantly higher DFS for p16+ versus p16- patients [68% vs. 48%; p=0.043]. HPV RNA ISH was performed in 22 patients, 10 of which were positive. The HPV-positive (HPV+) cohort was more likely to be younger and have negligible smoking history compared to HPV-negative (HPV-). Three HPV- patients died and four recurred versus one death and two recurrences in HPV+ (death: p=0.052; recurrence: p=0.0437). Odds ratio between HPV and p16 status was 14.19 (95% CI: 1.72, 442.03).

Discussion: For sinonasal carcinoma, neither a correlation between p16 and patient outcomes nor a relationship between HPV and p16 have been confirmed. Surgical resection is the current mainstay of treatment for sinonasal tumors. Based on prior studies in oropharyngeal SCC, there may be potential for modifying therapy for HPV+ lesions and introducing nonsurgical targeted therapy. Compared to literature on sinonasal SCC, our study had a larger proportion of HPV+ tumors and improved survival. We acknowledged a strong trend towards negligible smoking status in p16+ patients and a significantly improved DFS at three years in these patients compared to the p16- cohort. Although the relationship between p16 and HPV is not yet known for the sinonasal cavity, it is apparent from our study that p16+ patients demonstrate improved survival, similar to HPV+. Our data also favors

a positive association between p16 and HPV status (odds ratio 14.19). Given our sample size, further study is warranted to confirm our findings.

AHNS-090: GROSS TUMOR VOLUME AND INVASIVE TUMOR VOLUME USING 3 TESLA MRI AS PREDICTORS OF CERVICAL LYMPH NODE METASTASIS AND SURVIVAL IN ORAL TONGUE CANCER

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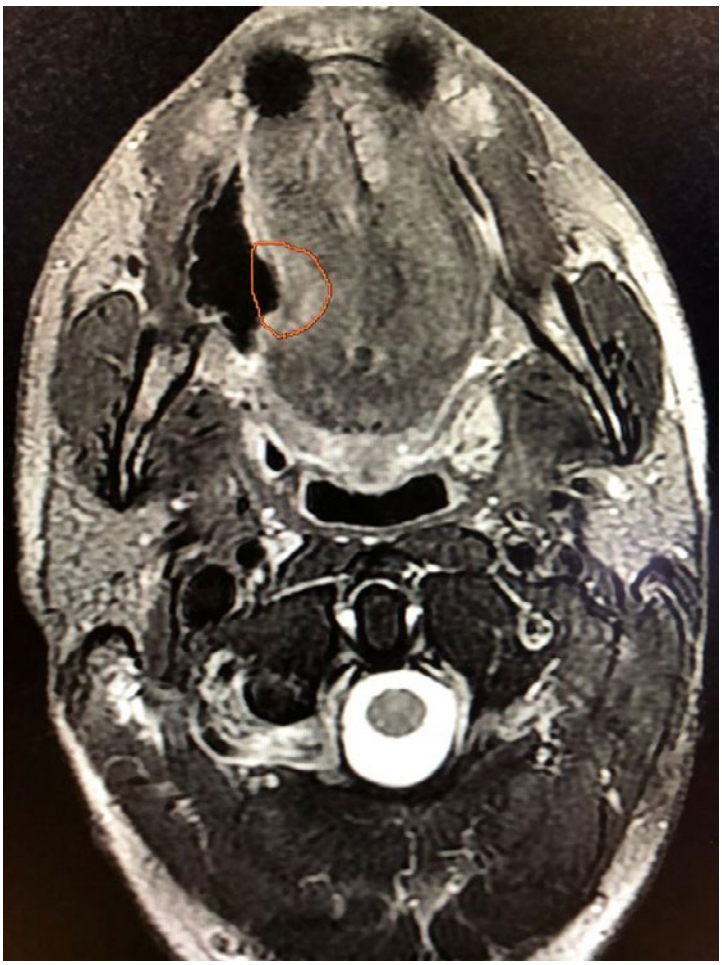
Background: Tongue cancer shows high variability in terms of prognosis, from slow progressing tumors to highly aggressive with local invasion and distant metastasis. T stage is an important prognostic tool for oral tongue cancer, and with the recent staging system update, depth of invasion is now accounted for when staging oral cavity squamous cell carcinomas (SCC). Acknowledging the three-dimensional nature of tumors is key. Depth of invasion is usually analyzed on pathology specimens after surgical resection and can be difficult to evaluate on superficial biopsies especially in exophytic tumors. One possible option for assessing tumor invasion is by measuring tumor volume using 3D reconstruction of axial imaging. 3T MRI offers extremely high-quality imaging to evaluate tongue tumor and allows easy delineation of tumor versus normal tissue in order to measure tumor volume.

Objectives: Evaluate and compare Gross Tumor Volume (GTV) and Invasive Tumor Volume (ITV) in relation to cervical metastasis and survival rates in oral tongue cancer.

Methods: Retrospective case series of 25 patients with histologically proven SCC of the tongue who underwent pre-operative evaluation with 3 Tesla MRI. GTV was calculated by manually delineating all visible tumor on axial MRI slices where tumor was present. ITV was measured based on tumor characteristics (exophytic versus ulcerated), this measurement was done by delineating areas of tumor invasion of the tongue by comparing the tumor side to the contralateral normal tongue outline. For example, in ulcerated tumors, the outlined area included the tumor as well as the ulcerated area based on the mirrored contralateral normal tongue outline. 3D rendering was then used to calculate the volume (Fig1). Receiver Operating Characteristic (ROC) analysis was applied to determine the optimal cutoff point for tumor volume. 2-year Overall Survival (2-yrOS) and 2-year Disease Free Survival (2-yrDFS) rates were calculated using the Kaplan–Meier method.

Results: 25 patients with SCC of the tongue underwent 3T MRI. After excluding 5 patients with dental artefacts on MRI, radiological tumor volumes were measured in 20 patients (14 men, 6 women). All patients had surgery as their primary treatment modality, with adjuvant therapy as indicated. Mean GTV was 15.38mL (range 0.563 to 70.2mL). The mean ITV was 13.49mL (range 1.658 to 52.12mL). GTV and ITV were higher in patients with positive cervical lymphadenopathy compared to patients with negative cervical lymph nodes, but this difference was not statistically significant. The ROC curve revealed an optimal cutoff volume of 15mL. There was no statistically significant difference in survival rates between small (<15mL) and large (>15mL) GTV. However, when analyzing invasive volume, ITV>15ml was associated with significantly lower survival rates compared to ITV<15mL. 2-yrOS rates were 86.67% in patients with ITV<15mL and 40% in patients with ITV>15mL (p=0.031). Similarly, 2-yrDFS rates were 66.67% in patients with ITV<15mL versus 20% in patients with ITV>15mL (p=0.023)

Conclusion: 3T MRI produces high quality imaging of tongue tissue allowing precise tumor volume measurements. ITV which can be considered a surrogate for depth of invasion is a more significant predictor of survival rates than conventional GTV.



AHNS-091: ROLE OF LYMPHOSCINTIGRAPHY AND SPECT-CT IN SENTINEL LYMPH NODE DETECTION IN EARLY STAGE SQUAMOUS CELL CARCINOMA OF ORAL CAVITY : OUR EXPERIENCE

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OBJECTIVE

A multidisciplinary team trial in a tertiary care centre in patients with early stage squamous cell carcinoma of oral cavity to review the established role of advanced imaging modalities like lymphoscintigraphy and SPECT-CT in sentinel lymph node identification and to layout our experience in performing this modality.

METHODS

A randomised, prospective, case control study of diagnosed cases of T1/T2 N0 squamous cell carcinoma of oral cavity undertaken from December 2016 to January 2018 at our institution of which the patients in study group underwent SLNB guided neck dissection and the patients in control group underwent Elective Neck Dissection. We compared both the groups in terms of the operating time , the post-operative histopathology , the diagnos-

tic accuracy and the outcomes which were statistically analysed. Also we studied and analysed the efficacy of static and dynamic lymphoscintigraphy followed by SPECT-CT in identifying sentinel lymph node areas in neck and intra-operative gamma probe use to precisely locate the sentinel nodes.

RESULTS

Out of 40 patients,20 each in study and control groups were included. The SLN identification rate was 100% with combined SPECT-CT and gamma probe use whereas it was 70% with imaging alone. The sensitivity, specificity, positive predictive value and negative predictive value of SLNB and END were 80% , 56.58%, 9.61%, 98% and 78.5 %, 73.48% ,10.67% , 98.8 % respectively. The operating time was less in the SLNB group with statistically significant difference between the two groups.

CONCLUSION

High SLN identification rate with combined use of SPECT-CT and gamma probe and high NPV render SLNB as a reliable modality in the management of early stage oral cavity cancers in a centre with a multidisciplinary team set up and appropriate facilities.

AHNS-092: TUMOR INFILTRATING LYMPHOCYTES PREDICT PROGNOSIS IN HEAD AND NECK SQUAMOUS CARCINOMA

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Introduction: Biomarkers that reflect prognosis and cellular immune reactivity in patients with HNSCC are a necessary prerequisite for improving individualized treatment that limits the intensity and morbidity of conventional treatment and may be useful in advancing the introduction of new immunotherapy regimens. Prior work suggests that tumor infiltrating lymphocytes (TILs) in the tumor microenvironment (TME) could provide predictive and prognostic information. To determine if TILs could be a useful biomarker, specific classes of TILs in pretreatment biopsy tissues were determined in a large cohort of patients with HNSCC enrolled in a prospective epidemiology project.

Methods: Studied were 455 previously untreated HNSCC patients with available tissue for construction of tissue microarrays (TMA). HNSCC disease sites (n) included oral cavity (228), oropharynx (139), larynx (73), and hypopharynx (15). Levels of CD4, CD8, FoxP3, CD103 and CD68 lymphocytes were measured by immunohistology and averaged in triplicate tissue microcores for each patient and correlations with clinical prognostic factors, initial treatment modality and overall (OS), recurrence free (RFS) and disease specific (DSS) survival were determined. Tumor stage was I (54), II (66), III (71) or IV (264). Initial primary treatment was surgery (+/- radiation) in 268, chemoradiation in 129, radiation alone in 19, and palliation in 39 patients. Human papilloma Virus (HPV) testing was performed in 340 patients and was positive in 85% of oropharynx patients. Kruskal-Wallis testing for associations with clinical variables and Cox Proportional Hazard modeling was performed adjusting for known prognostic factors, batch effects and variable interactions. Median follow-up was 44 months.

Results: Oropharynx site and HPV status were significantly associated with higher levels of all TIL subsets. Increased tumor stage and smoking history were associated with decreased CD8 levels. Levels of CD4, CD8, FoxP3 and CD103 cells were associated with T and N class and differed significantly by primary treatment. Univariable Cox models for each immune subset except CD68 were significant for OS, RFS, and DSS. By multivariable Cox model controlling for staining batch, age, clinical stage, disease site, comorbidities, HPV and smoking, higher CD8 levels predicted improved OS, RFS, and DSS for every 10 cell increase per microcore (HR 0.92 [95% C.I.= 0.87, 0.96], HR 0.92 [95% C.I.=0.87,0.97], HR 0.93 [95% C.I.=0.88, 0.98]; p=0.0006, p=0.0009, and p=0.005, respectively). CD4 and FoxP3 levels were significant for OS only (HR 0.94 [95% C.I.= 0.88, 0.99] and 0.92 [95% C.I.= 0.86, 0.99]; p=0.04 and p=0.02 respectively). When grouped by primary modality (surgery vs. chemoradiation) and tested for interaction, treatment was found to be an effect modifier for CD4 level as it relates to OS and DSS (p=0.009 and p=0.04 respectively). Low CD4 levels were significantly associated with decreased survival in the chemoradiation/radiation cohort, but not in the surgery cohort. CD8 levels appeared to be prognostic in both treatment groups.

Conclusion: Levels of TILs appear to be independent prognostic factors in patients with HNSCC. Despite the fact that there are confounding issues and interactions of tumor site and HPV status with treatment, subsets of TILs could be useful in selecting primary treatment modality.

AHNS-093: SENTINEL LYMPH NODE BIOPSY USING PREOPERATIVE CT LYMPHOGRAPHY AND INTRAOPERATIVE INDOCYANINE GREEN FLUORESCENCE IMAGING IN PATIENTS WITH EARLY TONGUE CANCER

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IMPORTANCE: Indocyanine green (ICG) fluorescence-guided sentinel lymph node (SLN) biopsy has been developed as a new technique for breast cancer with no use of radioisotope (RI). However, ICG method alone is not suitable for SLN biopsy in patients with oral cancer because of poor transcutaneous identification of fluorescence signal through platysma and sternoclidomastoid muscle.

OBJECTIVE: To assess the utility of a novel SLN biopsy technique using a combined method of preoperative CT lymphography followed by the intraoperative ICG fluorescence method for early tongue cancer patients.

DESIGN, SETTING, AND PARTICIPANTS: Prospective study was performed for eighteen patients (8 males and 10 females) with previously untreated cN0 early tongue cancer (squamous cell carcinoma) including 7 of T1N0 and 11 of T2N0 patients (7th edition of the AJCC / UICC TNM classification).

INTERVENTIONS: As a preoperative SLN mapping, CT lymphography was performed at the day before SLN biopsy on patients who were attached a lattice marker to the neck skin. SLN was determined as the firstly enhanced lymph node following peri-tumoral injection of iopamidol and its location was estimated in relation to the lattice marker. For SLN biopsy, minimum skin incision was made according to the pre-determined location of SLNs. ICG solution was injected into the peritumoral region and SLNs were excised under the ICG fluorescence guidance.

MAIN OUTCOMES AND MEASURES: Success rate of preoperative SLN mapping by CT lymphography and the number of SLN successfully identified by intraoperative ICG fluorescence method were evaluated. Following the removal of SLNs, metastasis to

SLNs was examined by the intraoperative frozen section.

RESULTS: Among 18 patients, SLNs could be mapped by preoperative CT lymphography in 16 patients (88.9%). At least one SLN was successfully identified in all these 16 patients with intraoperative ICG fluorescence method, resulting in the success rate of 88.9% to excise the SLNs by this combination method. Among 16 patients who were excised their SLNs, metastases to SLNs were found in 5 patients (31.3%): 2 patients of T1N0 and 3 of late T2N0.

CONCLUSIONS AND RELEVANCE: The novel SLN biopsy technique, preoperative CT lymphography mapping combined with the intraoperative ICG fluorescence method, achieved a high success rate to identify the SLN in cN0 tongue cancer patients. Preoperative CT lymphography mapping and intraoperative ICG fluorescence-guided SLN biopsy is simple, cost-effective, and useful combination method for SLN biopsy in early stage tongue cancer without using RI.

BEST OF MUCOSAL HPV NEGATIVE ABSTRACTS

AHNS-094: EVALUATING COMPLIANCE WITH PROCESS-RELATED QUALITY METRICS AND SURVIVAL IN ORAL CAVITY SQUAMOUS CELL CARCINOMA: A MULTI-INSTITUTIONAL ORAL CAVITY COLLABORATION STUDY

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Introduction: Process-related measures have been proposed as quality metrics in head and neck cancer care. However, there is limited data demonstrating association of these metrics and patient survival. A recent single-institution study identified four key quality metrics that were associated with increased overall survival (OS), disease-specific survival (DSS), and disease-free survival (DFS). This proposed "clinical care signature" included elective neck dissection with lymph node yield of 18 or more, no unplanned surgery within 14 days, no unplanned 30-day readmission, and referral for adjuvant radiotherapy for stage III or IV disease. The aim of this study was to evaluate the association of these key quality metrics with survival in a multi-institutional patient cohort.

Methods: An IRB approved multicenter retrospective cohort of patients treated with primary surgical resection for oral cavity squamous cell carcinoma at six tertiary care centers between 1/2005 and 1/2015 was queried to identify patients in whom quality metrics could be evaluated. Baseline patient and pathologic characteristics and compliance with predetermined quality metrics was evaluated. Association between compliance of these quality metrics with OS, DSS, and DFS was evaluated using Cox proportional hazards models.

Results: From the database of 1282 patients from 6 institutions, 773 patients from 3 institutions were included in the study. Compliance with quality metrics was high with 507 (65.6%) meeting all quality metrics, 240 (31.1%) had a single unfavorable quality metric, and only 26 (3.4%) had two or more unfavorable metrics. Five-year OS rate of the total patient population was 0.62 (95% CI: 0.58-0.66), with median of 100.1 months (95% CI: 83.1-120.4 months). Five-year DFS rate was 0.50 (95% CI: 0.46-0.54), with median of 59.6 months. Five-year DSS rate was 0.78 (95% CI: 0.74-0.81), median was not reached. On multivariate analysis, patients with two or more unfavorable process metrics of the clinical care signature had significantly worse OS (HR 1.77, 95% CI: 1.02-3.07), DFS (HR 2.18, 95% CI: 1.33-3.59), and DSS (HR 3.15, 95% CI: 1.58-6.28) than patients with one or less unmet quality metric. On univariate analysis, unplanned surgery within 14 days (HR 1.76, 95% CI: 1.16-2.68) and unplanned readmission within 30 days (HR 1.87, 95% CI: 1.20-2.91) were significantly associated with worse OS, with unplanned surgery also significantly associated with worse DSS (HR 2.12, 95% CI: 1.22-3.68). Patients who received a referral for adjuvant radiotherapy for stage III or IV disease had significantly better DFS than patients who did not receive a referral (HR 0.48, 95% CI: 0.33-0.69).

Discussion: In this study, patients with two or more unfavorable clinical care signature quality metrics experienced a worse OS, DFS, and DSS. Compliance with quality metrics across participating institutions was high, and in this population an elective neck dissection was not significantly associated with OS, DFS, or DSS.

Conclusions: Process-related quality metrics were able to identify patients with worsened outcomes. In this cohort, patients with two or more unfavorable key quality metrics were shown to have worsened survival.

AHNS-095: NDRG1 EXPRESSION PREDICTS TUMOR PROGRESSION AND METASTASIS IN ORAL CANCER

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Background: Regional metastasis is the single most important prognostic factor in oral squamous cell carcinoma (OSCC). N-myc downstream-regulated genes (NDRG) were reported to be associated with poor prognosis in several tumors, however, the role in OSCC has not been described thoroughly yet.

Methods: DNA from laser microdissected cells from 20 cases was investigated for copy number variants (CNVs) using array comparative genomic hybridization (aCGH). NDRG1 relevance was assessed at protein level in tissue microarray containing 100 OSCC patients followed-up by at least 10 years. Survival outcome were analyzed using a multivariable analysis. Therapeutic potential was investigated in preclinical model using two oral cancer cell lines (HSC3, SCC15) treated with EGF and an orthotopic mouse model of metastatic OSCC.

Results: aCGH of 20 matched OSCC and normal tissues revealed a few CNVs recurrently containing genes from NDGR family. NDRG1 protein expression levels were lower in patients with metastasis compared to patients with local disease only (P=0.001). An association between expression of NDRG1 and of MMP-2, -9, and -10 (P=0.022, 0.002, 0.042, respectively), and BCL2 (P=0.035) were found. NDRG1 was able to predict of recurrence and metastasis (log-rank test, P=0.001). In multivariate analysis, the expression of NDRG1 was an independent prognostic factor (Cox regression, P=0.013). EGF-treated oral cancer cells showed lower NDRG1 expression and up-regulation of markers of epithelial to mesenchymal transition (EMT). This result was also confirmed in

animal orthotopic model, where metastatic tumors did not show NDRG1 expression.

Conclusion: NDRG1 expression is a potential metastatic predictor in oral cancer. Interfering with NDRG1 and its upstream proteins can result in rescue of NDRG function and suppression of invasive properties.

AHNS QUICKSHOT PRESENTATIONS

AHNS-QS-096: FACTORS AFFECTING TREATMENT CHARGES FOR HEAD AND NECK CANCER

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Background: Financial toxicity is a serious concern for patients with cancer. Here, we conducted an investigation of one-year charges for head and neck cancer (HNC) patients and analyzed factors associated with increased charges.

Methods: A review of clinical data and one-year-charges was performed for new HNC patient visits from January 1, 2016 to March 31, 2017 at a tertiary care institution. Two-hundred-and-fourteen patients met inclusion criteria. Demographics and clinical variables were recorded, including primary site, AJCC 7thedition staging, insurance type, comorbidities, treatment modality, new vs. recurrent tumor, and curative vs. palliative pathway. Appropriate statistical tests, notably multivariable regression, were used to investigate factors associated with increased charges.

Results: The mean age was 59.6 years (Table 1). Most of the population was male (65%), white (72%), and privately insured (66%). The most common primary sites were oropharynx (25%; 77% HPV-positive), skin (22%), thyroid (15%), and oral cavity (15%). Ninety percent were treated with curative intent, and 10% were treated with palliative intent. The most common treatment modalities were surgery alone (36%), chemoradiation (21%), and surgery plus chemoradiation (14%).

The mean charge per patient was $291,080 (SD 256,133) with the median and interquartile range being $188,942 (74,384–459,623) (Figures 1-3). Radiation oncology had the largest contribution to mean charge per patient at $105,930, followed by surgery ($83,784), medical oncology ($49,737), and radiology ($23,892).

Total charges were significantly higher for patients treated with curative intent [$212,794 (82,436–471,610), median (IQR)] vs. patients treated with palliative intent [$110,172 (35,800–246,762); p=0.0217; Figure 4]. Curative patients had higher charges for anesthesia [$2,520 (811–5,347) vs. $0 (0–1,790); p=0.0002] and pathology [$1,976 (794–5,335) vs. $0 (0–358); p<0.0001], whereas palliative patients had higher charges for medical oncology [$45,463 (3,250–899,850) vs. $4,004 (255–47,280); p=0.0182]. Total charges did not differ significantly between patients with primary tumors versus those with recurrences [$245,658 (67,598–473,147) vs. $145,407 (77,381–397,166); p=0.3792], nor did it vary by race or insurance type.

Total charges varied significantly depending on clinical stage (p=0.0001). Charges for stage I, II, III, and IV were $66,131 (44,152–148,206), $124,174 (60,456–336,727), $430,060 (128,422–508,467), and $360,744 (148,677–519,839). One reason that stage IV patients did not have a higher charge than stage III patients is that 16% were treated with palliative intent vs. 3% (p=0.058), and palliative treatment of stage IV patients was associated with lower charges [$150,228 (52,341–446,488) vs. $380,274 (181,933–527,701); p=0.0248].

On multivariable analysis (Table 2), Charlson comorbidity index [$18,566 per unit increase (690–36,442); effect size (95% CI); p=0.042], hypopharynx subsite [$250,169 (19,730–480,608); p=0.034], chemotherapy [$234,543 (142,102–326,985); p<0.001], and radiation [$194,629 (95,018–294,239); p<0.001]were associated with increased charges from the base charge of $61,862 USD (-43,576–167,300).

Conclusion: This is the most comprehensive report of charges for treating HNC to date. Increased comorbidity, hypopharynx subsite, chemotherapy, and radiation were associated with higher charges. No evidence for charging bias based on patient-specific factors was evident. These findings are valuable contributions to assessing value in HNC treatment.

Table 1. Demographic information, clinical characteristics, and treatment plan of study cohort (n=214).	
Demographics	**No. (%)**
Age, yrs., mean (SD)	59.6 (14.8)
Male	138 (64.5)
Race	
White	155 (72.4)
Mixed/other race	39 (18.2)
Asian	10 (4.7)
Black	8 (3.7)
Unknown	2 (0.9)
Zip code median household income, USD, median (IQR)	65,686 (52,029-83,288)
Primary payor	
Private	141 (65.9)
Medicare	61 (28.5)
Medicaid	8 (3.7)
Other government	3 (1.4)
Self-pay	1 (0.5)
Clinical information	
Charlson comorbidity score, median (IQR)	0 (0-2)
Smoking	94 (44.6)
Alcohol	202 (94.4)
Depression	45 (21.0)
Recurrent	54 (25.2)
Primary	160 (74.8)
Primary site	
Oropharynx	53 (24.8)
P16-positive	41 (77.1)
Skin	46 (21.5)
Thyroid	33 (15.4)
Oral cavity	31 (14.5)
Larynx	24 (11.2)
Major salivary gland	9 (4.2)
Sinonasal	7 (3.3)
Hypopharynx	6 (2.8)
Nasopharynx	5 (2.3)
AJCC 7th edition clinical stage	
0 (Tis)	3 (1.4)
I	42 (19.6)
II	40 (18.7)
III	33 (15.4)
IV	96 (44.9)
Treatment	
Plan	
Curative	193 (90.2)
Palliative	21 (9.8)
Treatment category	
Surgery alone	77 (36.0)
Chemoradiation	45 (21.0)
Surgery + chemoradiation	30 (14.0)
Chemotherapy alone	19 (8.9)
Surgery + radiation	16 (7.5)
Radiation alone	12 (5.6)
Surgery + chemotherapy	11 (5.1)
Non-therapeutic/diagnostic surgery alone	4 (1.9)
Treating institution	
All at UCSD	156 (72.9)
Partially at UCSD	58 (27.1)
AJCC 7th edition pathological stage (n=131)	
0 (Tis)	3 (2.3)
I	33 (25.2)
II	27 (20.6)
III	28 (21.4)
IV	40 (30.5)

Caption for Table 1. Demographic information, clinical characteristics, and treatment plan of study cohort (n=214). Unless otherwise indicated, data represent number (%) of patients. Instances of column percentages not adding to 100% are due to rounding error. Normally distributed continuous variables are depicted by mean (standard deviation, SD) and non-normally distributed continuous variables are depicted by median (interquartile range; IQR). Abbreviations: AJCC = American Joint Commission on Cancer, USD = United States dollars, UCSD = University of California – San Diego, Tis = tumor in situ.

Figure 1. Total Charges By Department.

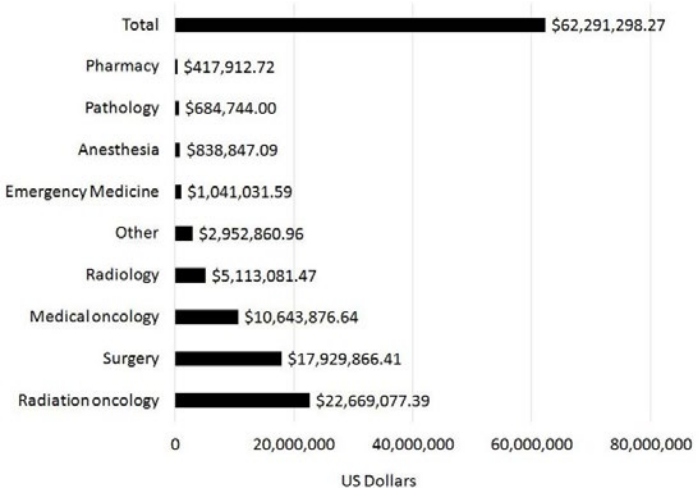

Figure 2. Total Charges By Department Per Patient.

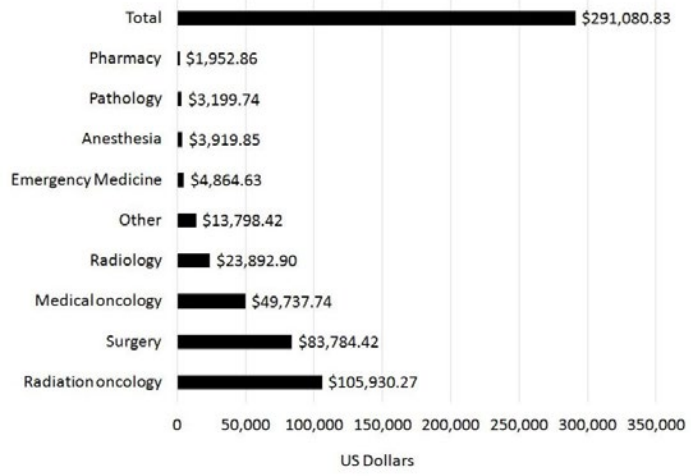

Figure 3. Histogram of Total Charges.

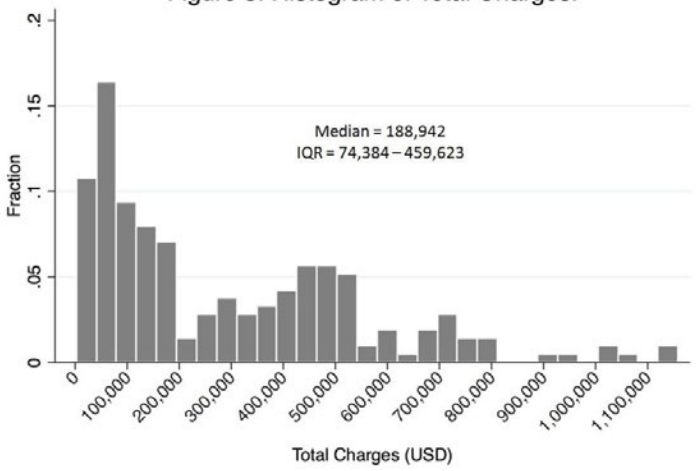

Figure 4. Histogram of Total Charges By Treatment Plan.

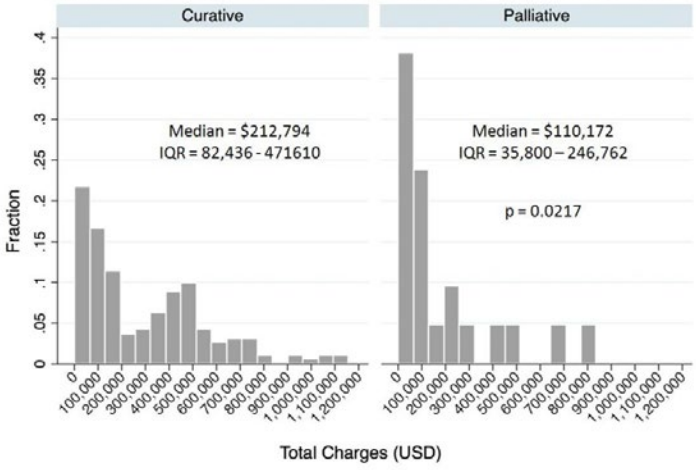

Table 2. Multivariable Regression of Factors Associated with Increased Charges

	Increase/decrease in USD (95% CI)	p
Charlson comorbidity index, per 1 unit increase	**18,566 (690 – 36,442)**	**0.042**
Site (Reference – Oropharynx)		
Hypopharynx	**250,169 (19,730 – 480,608)**	**0.034**
Larynx	-2,157 (-140,141 – 135,826)	0.975
Nasopharynx	33,831 (-355,197 – 422,860)	0.863
Sinonasal	-127,157 (-326,840 – 75,526)	0.210
Oral cavity	42,325 (-66,525 – 151,176)	0.443
Major salivary gland	-124,117 (-318,679 – 70,443)	0.209
Skin	41,214 (-69,207 – 151,636)	0.461
Thyroid	-26,187 (-138,041 – 85,666)	0.644
Pathological stage (Reference – Stage I)		
Stage II	21,108 (-84,505 – 126,721)	0.693
Stage III	82,841 (-11,959 – 177,642)	0.086
Stage IV	82,834 (-19,366 – 185,035)	0.111
Chemotherapy	**234,543 (142,102 – 326,985)**	**<0.001**
Radiation	**194,629 (95,018 – 294,239)**	**<0.001**

Caption for Table 2. Multivariable Regression of Factors Associated with Increased Charges (n = 214). Univariable regression was used to select variable for multivariable regression, with $p < 0.15$ being required for inclusion in the multivariable model. The multivariable model was modified using backward elimination of variables, retaining variables if $p < 0.15$ to produce a parsimonious and representative model accounting for relevant factors. The base charge (i.e. y-intercept of the regression line) was $61,862 USD (95% CI -43,576 – 167,300). Effect sizes represent increase or decrease from the base charge. Charlson comorbidity index, hypopharynx subsite, chemotherapy, and radiation were associated with increased charges.

AHNS-QS-097: IDENTIFICATION OF ANTIGENS FOR A MULTIVALENT VACCINE FOR HEAD AND NECK SQUAMOUS CELL CARCINOMA

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IMPORTANCE: Head and neck squamous cell carcinoma (HNSCC) has poor outcomes secondary to late presentation and poor therapies available for advanced-stage disease. Treatment paradigms have remained largely unchanged in this regard over the last several decades with very few improvements in survival for patients with this form of cancer. More recently, immunotherapies have become of increasing interest for treatment of many malignancies, including HNSCC. It is known that an effective immune response against malignancy requires induction of a predominantly Th1 effector-type response, while Th2 type responses are associated with tumor tolerance. It has been traditionally challenging to develop vaccines which were able to induce a Th1 specific immune response, however our lab has pioneered development of Th1 selective epitope based vaccines. Such vaccines have already proven to be effective at decreasing tumor development and reducing tumor burden in mouse models of lung, breast and colon cancer. Bringing such immunotherapies into the realm HNSCC would broaden the arsenal of available therapies against this disease and potentially improve stagnant trends in overall survival.

OBJECTIVES: 1. Identify antigens that are overexpressed in HNSCC and determine their functional relevance to cancer progression by siRNA screening in HNSCC cell lines. 2. In silico prediction to identify epitopes from the antigens able to elicit Th1 selective

CD4+ T cell response.

METHODS AND RESULTS: Target genes were identified from curated open access data sets of human array data as overexpressed in human HNSCC but not in normal mucosa. Initial database query resulted in 3 data sets (GSE31056, GSE3524, and GSE6631) which contained a total of 72 normal mucosa samples and 84 tumor samples. The top 300 over-expressed genes for each dataset were selected and then cross-compared between datasets for those with >3 log-fold increased expression with $p<0.005$ between all data sets analyzed. From within these data sets, 9 over-expressed genes were identified which met our criteria: AGRN, MFAP2, COL4A1, AURK, FN1, SOX4, BUB1B, GTF2E1, and COL1A2. Systematic review of the literature was performed to investigate a role for these genes and their proteins in HNSCC and a pathogenic or prognostic role was revealed for each gene. We have used an in silico prediction algorithm to identify 15-mer peptides sequences (epitopes) which display high affinity binding across multiple HLA-II subtypes, which we now correlate with those able to induce Th CD4+ T cell responses. These predicted Th epitopes will be our first candidates to evaluate Th1 and Th2 responses. Finally, to narrow our list of potential targets for the vaccine, we will evaluate these 9 antigens in siRNA screening to identify those required for survival of HNSCC cell lines in comparison with a control normal epithelial cell line.

CONCLUSION: We have identified 9 genes which are implicated in HNSCC and whose peptide products may serve as ideal anti-cancer vaccine candidates after further immunologic testing. A vaccine able to elicit a strong Type I immune response could prevent disease recurrence or synergize with current anti-PD1/PD-L1 or other therapies to improve responses.

AHNS-QS-098: PALLIATIVE QUAD SHOT RADIOTHERAPY IN ADVANCED HEAD AND NECK CANCER (HNC) IMPACT ON SYMPTOMATIC RELIEF AND QUALITY OF LIFE

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Introduction: Head and Neck Cancer (HNC) is one of the most common cancers in developing countries. Approximately one-third of patients presents in advanced stages and are unfit for curative treatment. The therapeutic goals in these patients are palliation of symptoms and improving quality of life (QOL). We prospectively investigated the role of palliative RT in 2 days (QUAD SHOT) on QOL in these advanced HNC patients unfit for curative treatment.

Objectives: The study aims to evaluate symptom relief and quality of life (QOL) in advanced HNC patients treated with QUAD-SHOT Radiotherapy.

Methods: 36 patients of advanced HNC were recruited in this prospective study. Palliative QUAD SHOT RT delivers 14 Gy in 4 fractions twice daily 6 hours apart on 2 consecutive days. The regimen was delivered every 4 weeks for a maximum of 3 cycles if the disease shows response. Symptom relief was assessed using EORTC H&N 35 questionnaire and QOL was assessed with EORTC QLQ-C30 questionnaire. Permission was taken to use these standard questionnaires. Statistical analysis was done using SPSS v.20.

Results: Median age of the group was 52.5 yrs with ECOG Performance Scale (PS) 2. Stage IV-A and IV-B comprised 16 and 20 patients respectively. 31 patients were males and 5 patients were females. Most common sites were oral cavity (63.9%), oropharynx (22.2%) and larynx (13.8%). Mean duration of symptoms was 5 months with Pain (100%), dysphagia (83.3%) and neck swelling (75%) being major symptoms. 23 patients (63.9%) received ≥2 cycles of QUAD SHOT RT of which 14 patients (38.9%) completed three cycles.

The mean baseline pain score was 32.40 (SD, 14.19) while the mean pain score after one month of first , second and third cycles of radiation treatment was 12.82 (SD, 10.60), 9.80 (SD, 9.87) and 4.76 (SD, 7.81) respectively. Similarly, the mean initial dysphagia score was 32.87 (SD, 17.69) whereas it changed to 7.14 (SD, 3.02) after the third cycle of QUAD-shot RT.

The mean global health score (GHS) in this study at the baseline was 45.13 (SD, 13.99), while at 3 and 6 months, the mean score was 63.72 (SD, 11) and 60.41 (SD, 8.65) respectively.

Conclusions: Palliative QUAD SHOT RT is a feasible treatment option in advanced HNC patients unfit for curative treatment. It produces quick symptomatic relief in short duration and improves QOL. Thus QUAD SHOT RT can be used effectively in institutes with high patient burden of advanced HNC in limited resource countries.

Keywords: Radiotherapy; Quad shot; Palliation; Advanced head and neck cancer; QOL

AHNS-QS-099: HOSPITAL MARKUP AND HEAD AND NECK CANCER SURGERY OUTCOMES IN THE UNITED STATES

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Context: Health care spending continues to grow at a rate that is predicted to exceed growth in the US economy, with marked variation in hospital costs and payments a target for healthcare reform efforts. Limited data exists to explain variability in prices for head and neck surgical procedures, and if variations in surgical price are associated with outcomes.

Objective: To characterize variations in hospital price markup for head and neck cancer surgical procedures, and examine associations with postoperative complications and in-hospital mortality.

Design, Setting, and Participants: The Nationwide Inpatient Sample was used to identify 157,464 patients who underwent head and neck cancer surgery at 4,833 hospitals for a malignant upper aerodigestive tract neoplasm in 2001-2011. Markup ratio (charges to costs) was modeled as a continuous and categorical variable. Hospital volume was modeled as a categorical variable. Hospital market concentration was evaluated using a variable-radius Herfindahl-Hirschman Index from the 2001, 2003, 2006, and 2009 Hospital Market Structure files.

Main Outcomes and Measures: Cross tabulations and multivariable regression was used to evaluate associations between markup ratio, hospital and patient variables, markup ratio, postoperative complications and in-hospital mortality.

Results: Hospital markup ratios ranged from 0.8-8.7, with a mean markup ratio of 2.8 (95% CI 2.7-2.8). Hospitals in the lowest markup ratio quartile (low markup) had a mean markup ratio of 1.82 (1.76-1.87), while hospitals in the top markup ratio quartile (extreme markup) had a mean markup ratio of 4.02 (3.9-4.1). Compared to low markup hospitals, extreme markup hospitals

were more often large (78.4% vs. 68.3%), urban (99.1% vs. 89.4%), private for-profit hospitals (18.7% vs 1.5%) and were less likely to be high-volume hospitals (12.6% vs. 19.2%) or in competitive markets (64.5% vs 85.1%). Postoperative complications occurred more often in extreme markup hospitals (22.8% vs. 17.0%). Overall in-hospital mortality was 1.0% and did not vary by markup ratio. On multivariate analysis, a significantly higher markup ratio was associated with private, for-profit hospitals (50.6% [36.6-66.1%], P<0.001), urban hospitals (31.0% [25.4-36.9%]; P<0.001), hospitals located in the West (27.2%; 14.6-41.2%]; P<0.001), and advanced comorbidity (3.5% [1.0%-6.0%]; P=0.0006). The extent of surgery, hospital volume, market share, morbidity, and mortality were not associated with significant differences in markup ratios.

Conclusions and Relevance: There is wide variation in hospital markup for head and neck cancer surgery, with a four-fold increase in charges relative to costs in 25% of hospitals. Variations in surgical price are not associated with the extent of surgery, hospital volumes, or outcomes. These data suggest that greater transparency is needed to address disparities in hospital pricing in an era of cost containment.

AHNS-QS-100: FACTORS PREDICTIVE OF 90-DAY MORTALITY AFTER SURGICAL RESECTION FOR ORAL CAVITY CANCER: DEVELOPMENT OF A RECURSIVE PARTITIONING ANALYSIS FOR RISK STRATIFICATION

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Introduction: Treatment of oral cavity cancer (OCC) is primarily surgical, followed by adjuvant therapy based on pathologic risk factors. While post-operative mortality (POM) has been associated with individual patient, disease, and treatment related factors, methods to create an algorithm to enable clinicians to better identify patient groups at various risks of POM have not been created. This study sought to evaluate predictors of 90-day POM in oral cavity patients and create a tool for clinicians to utilize to identify subgroups at highest risk for POM.

Materials and Methods: Patients with non-metastatic OCC diagnosed from 2004 to 2015 were identified from the National Cancer Database. Patients who underwent upfront surgical resection were evaluated. Patients were only included if they had known pathologic tumor (pT) and pathologic nodal (pN) staging. Baseline demographics, pathological, and treatment related factors were collected for use as covariates. Surgery was defined as wide local excision (including partial and hemiglossectomy) and radical (including total glossectomy and composite mandibular and/or maxillary resection). 90-day POM was evaluated using chi-square, multivariate logistic regression (MLR), and recursive partitioning analysis (RPA).

Results: We identified 33,845 patients. Ninety-day POM for the entire cohort was 3.2%. Most (95.3%) patients had squamous histology. Adjuvant radiation (RT) was delivered to 43.3% of patients, and 18.9% received chemotherapy (CT). Most (87.9%) patients receiving CT received it concurrently with RT.

On MLR, factors that predicted for a higher likelihood of 90-day mortality included older age, higher Charlson Deyo (CD) co-morbidity score, higher pT and pN stage, positive margins, pathologic extracapsular extension (ECE), and undergoing radical surgery compared to wide local excision. Factors that were protective against 90-day mortality included private insurance, those from higher income counties, receipt of RT and CT, and gum or hard palate primary subsite.

RPA was created incorporating all factors from the MLR analysis, focusing on four variables most predictive of higher rates of 90-day POM: pT, pN, patient age, and CD score. According to RPA, 90-day POM was highest in patients ≥ 60 years old, with a CD score ≥2 and T3-4, N2-3 disease (POM: 24.4%). Ninety-day POM was lowest in any age patient with T1-2 N0 disease (POM 1.4%) or those <70 years, with a CD score ≤1 and T1-2, N1-N3 disease and (90-day POM: 1.2%).

Conclusions: Patients undergoing curative intent resection for OCC appear to have a range of 90-day POM based primarily on age, comorbidity score, and pathologic tumor and nodal stage. Older patients with multiple comorbidities who present with higher-stage disease are at the greatest risk for 90-day POM, with rates exceeding 20%. Socioeconomic and insurance statuses also affect 90-day POM on MLR. For these high-risk individuals, multidisciplinary care with close monitoring following hospital discharge and early incorporation of additional supportive care services may be needed.

AHNS-QS-101: PREOPERATIVE RISK INDEX FOR PATIENTS UNDERGOING HEAD AND NECK CANCER SURGERY

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Background: Seniors are the largest demographic users of operative resources and most vulnerable to postoperative adverse events. Within head and neck cancer surgery, frailty indices are increasingly being utilized for risk stratification; however, most models lack a multifactorial basis and cannot be directly applied to clinical practice.

Methods: A cohort analysis of inpatient head and neck cancer surgeries recorded in the American College of Surgeons National Surgical Quality Improvement Program (ACS NSQIP) participant user file from 2006-2016 was performed. The primary outcome was a composite variable of major adverse events including death within 30 days of surgery. The secondary outcome was discharge location to any facility other than home. Sociodemographic, frailty-related and surgical factors in the derivation cohort were evaluated using simple and multiple logistic regression. Predictor variables were subsequently integrated into a preoperative head and neck surgery risk index (HNSRI) and compared to existing models using the validation cohort.

Results: Of the 31 399 operations reviewed, 4556 (14.5%) patients had a major postoperative AE with 209 (0.7%) deaths. Older age, male sex, smoking, anticoagulation, recent weight loss, functional dependence, free tissue transfer, tracheotomy, length of surgery, wound classification, anemia, leukocytosis and hypoalbuminemia were independently associated with major AEs or death on multiple regression analysis (c statistic 0.83, Table 1). The area under the curve (AUC) of the HNSRI to predict major adverse events including death using the validation cohort was 0.84 (95% CI 0.83 – 0.85) with sensitivity 80.1% (95% CI 79.4 – 80.8) and specificity 72.3% (95% CI 70.3 – 74.2, Table 2). The AUC for the HNSRI to predict any morbidity was 0.82 (95% CI 0.82 – 0.83) with sensitivity of 74.1 % (95% CI 72.3 – 75.9) and specificity of 77.4% (95% CI 76.6 – 78.1, Table 3). The HNSRI outperformed existing risk models for prediction of major adverse events including death (P < 0.0001, Figure 1). The predictive ability of the HNSRI for discharge desti-

nation was 84% (95% CI 83 – 86) with a sensitivity of 79.7% (95% CI 76.2 – 82.8) and specificity of 76.6% (95% CI 75.9 – 77.3).

Conclusion: The head and neck surgery risk index accurately predicts major postoperative adverse events including death in the studied population. This risk index can be used to counsel patients awaiting head and neck cancer surgery.

Table 1 – Final Model for Predicting Major Adverse Events or Death

Factor	Prevalence (%)	PAF (%)	β-Coefficient	Odds Ratio	95 % CI	Score 1
Age						
50-59	24.0	3.3	0.129	1.14	0.88 – 1.47	1
60-69	24.3	7.0	0.274	1.31	1.03 – 1.69	3
70-79	15.0	8.0	0.447	1.58	1.21 – 2.07	4
80-89	6.3	3.0	0.396	1.49	1.05 – 2.09	4
90+	0.5	0.05	1.146	3.15	1.14 – 8.30	11
Male	45.5	12.0	0.265	1.30	1.10 – 1.55	3
Hypertension (on medication)	43.5	12.6	0.285	1.33	1.12 – 1.58	3
Dyspnea	7.3	3.4	0.392	1.48	1.16 – 1.88	4
Chronic Steroid Use	3.2	1.6	0.410	1.51	1.08 – 2.09	4
Anticoagulation	2.1	1.5	0.827	2.29	1.57 – 3.31	8
Current Smoker	2.2	1.5	0.521	1.68	1.16 – 2.42	5
Leukocytosis (WBC> 11.5)	8.2	5.8	0.542	1.72	1.35 – 2.20	5
Anemia (HCT <35)	10.6	15.1	0.987	2.68	2.12 – 3.25	10
Hypoalbuminemia (<3.5 g/dL)	4.9	3.1	0.507	1.66	1.33 – 2.06	5
Weight Loss	2.9	2.9	0.708	2.03	1.51 – 2.72	7
Functional Loss[¤]	2.0	1.6	0.591	1.81	1.23 – 2.63	6
Surgical Time						
4 to 8 hours	21.7	22.9	0.864	2.37	1.93 – 2.91	9
> 8 hours	11.0	31.7	1.652	5.22	4.06 – 6.71	17
Free Tissue Transfer	10.0	9.1	0.696	2.00	1.59 – 2.53	7
Tracheostomy	5.5	4.3	0.600	1.82	1.42 – 2.34	6
Wound Class						
Clean-Contaminated	30.7	16.0	0.481	1.62	1.34 – 1.95	5
Contaminated	1.3	2.5	1.094	2.99	1.84 – 4.80	11
Dirty	0.8	2.6	1.462	4.31	2.45 – 7.57	15

CI: Confidence Interval, HCT: Hematocrit, OR: Odds Ratio, PAF: Population Attributable Fraction, REF: Reference. WBC: White Blood Cell Count. Score derived from multiplying the β-coefficient by 10. [¤]Functional loss includes dependence of independent activities of daily living or living in a nursing facility prior to surgery.

Table 2 – Head and Neck Surgery Risk Index (HNSRI) for major adverse events and death in the derivation and validation cohorts

	Derivation Set				Validation Set			
Preoperative Risk Score	Total Patients	Event or Death % (n)	Odds Ratio (95% CI)	AUC (95% CI)	Total Patients	Event or Death % (n)	Odds Ratio (95% CI)	AUC (95% CI)
0 - 10	8054	2.9 (235)	REF		8012	2.6 (208)	REF	
11 - 20	3482	8.0 (277)	2.88 (2.41 – 3.44)		3554	9.1 (324)	3.76 (3.15 – 4.51)	
21 - 30	1990	19.0 (378)	7.00 (6.50 – 9.27)	0.83	2018	18.6 (376)	8.59 (7.20 – 10.3)	0.84
31 - 40	1278	38.1 (487)	20.5 (17.3 – 24.4)	(0.82-0.84)	1228	39.3 (483)	24.3 (20.4 – 29.1)	(0.83-0.85)
41 - 50	634	55.0 (349)	40.7 (33.3 – 50.0)		626	55.4 (347)	46.7 (37.9 – 57.6)	
51+	261	76.6 (200)	109 (80.1 – 150)		262	69.5 (182)	85.4 (63.7 – 115)	

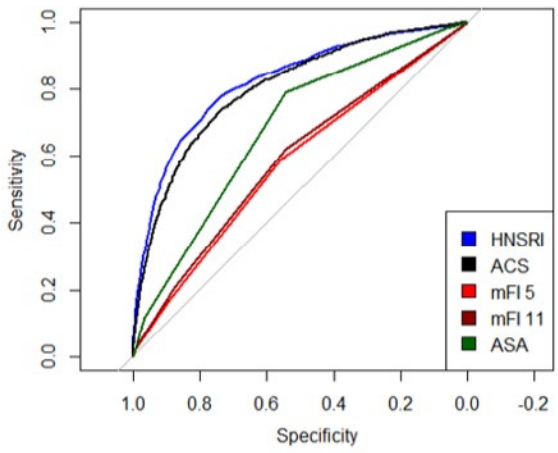
AUC: Area Under the Curve, CI: Confidence Interval, REF: Reference.

Table 3 – Comparison of risk models to predict postoperative morbidity and mortality within 30 days from surgery

Models	Number of Parameters	Major Adverse Event including Death		Any Adverse Event		Death	
		AUC (95% CI)	Pairwise Comparison	AUC (95% CI)	Pairwise Comparison	AUC (95% CI)	Pairwise Comparison
Head and Neck Surgery Risk Index	16	0.84 (0.83–0.85)	REF	0.82 (0.81–0.84)	REF	0.83 (0.79–0.87)	REF
ASA Class	1	0.69 (0.68–0.70)	P < 0.0001	0.68 (0.67–0.69)	P < 0.0001	0.75 (0.72–0.79)	P < 0.0001
Modified Frailty Index 11	11	0.59 (0.57–0.60)	P < 0.0001	0.59 (0.58–0.60)	P < 0.0001	0.66 (0.61–0.71)	P < 0.0001
Modified Frailty Index 5	5	0.58 (0.56–0.59)	P < 0.0001	0.58 (0.57–0.59)	P < 0.0001	0.66 (0.60–0.71)	P < 0.0001
ACS Risk Calculator	20	-	-	0.80 (0.79–0.80)	P < 0.0001	0.90 (0.87–0.92)	P = 0.007*

ACS: American College of Surgeons, ASA: American Society of Anesthesiologists, AUC: Area Under the Curve, CI: Confidence Interval, REF: Reference value. Pairwise comparison: comparison between the Risk Index and selected model using DeLong method. *ACS Universal Risk Calculator has statistically larger AUC than Risk Index to predict mortality

Figure 1 – Receiver Operator Characteristic curves of the different risk models to predict any postoperative adverse event 30 days from surgery



The Receiver Operator Characteristics (ROC) curve comparing the Head and Neck Surgery Risk Index (HNSRI, blue) with the American College of Surgeons (ACS) Surgical Risk Calculator, American Society of Anesthesiologists (ASA) class, modified frailty index(mFI) 11 and 5. Comparison of each model to the developed Risk Index (blue) was statistically significant (P < 0.0001).

AHNS-QS-102: ASSOCIATION OF FRAILTY WITH OUTCOMES AFTER LOW-RISK AND HIGH-RISK HEAD AND NECK CANCER SURGERY

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IMPORTANCE: Frailty is a measure of decreased physiologic reserve that is associated with morbidity and mortality after major surgery. However, the association of frailty with outcomes after relatively lower risk inpatient head and neck procedures has yet to be established.

OBJECTIVE: To assess the association of frailty with short-term outcomes in patients undergoing high- and low-risk ablative head and neck cancer surgery

DESIGN: Cross-sectional analysis, 2010-2014

SETTING: Nationwide Readmissions Database

PARTICIPANTS: Patients undergoing ablative surgery for a malignant oral cavity, oropharyngeal, laryngeal, or hypopharyngeal neoplasm

MAIN OUTCOMES AND MEASURES: Frailty was defined using the Johns Hopkins Adjusted Clinical Groups frailty-defining diagnoses indicator. Procedures were categorized as low mortality risk (≤1%) or high mortality risk (>1%). High-risk procedures included total laryngectomy, total glossectomy, maxillectomy, mandibulectomy, pharyngectomy, and esophagectomy. Low-risk procedures included partial glossectomy, partial laryngectomy, tonsillectomy, and other oral cavity/oropharyngeal excision. Multivariate regression was used to analyze the association of frailty with postoperative outcomes including in-hospital mortality, Clavien-Dindo IV complications, 30-day readmissions, nonhome discharge, length of stay, and hospital costs. Length of stay and hospital costs were considered elevated if they were in the highest quartile for the given risk group.

RESULTS: Of 76,625 included patients, 42,121 (55%) underwent low-risk and 34,504 (45%) underwent high-risk surgery. Frailty was more common in patients undergoing high-risk (18%) compared to low-risk procedures (9%). After low-risk surgery, the rate of major complications in frail patients was 30%, compared to 8% for non-frail patients (+22%; 95% CI, 19%-25%). After high-risk surgery, these rates were 35% and 14% for frail and non-frail patients, respectively (+21%; 95% CI, 18%-23%). Frail patients experienced higher rates of in-hospital mortality after both low-risk (2% vs. 0.4%; +D1.6%; 95% CI, 1%-3%) and high-risk surgery (3% vs. 1%; +D2%; 95% CI, 1%-3%). Similarly, rates of 30-day readmission were higher among frail patients after low-risk (17% vs. 10%; +D7%; 95% CI, 5%-11%) and high-risk (21% vs. 17%; +D3%; 95% CI, 1%-6%) operations. Frail patients undergoing low-risk surgery had increased odds of nonhome discharge (adjusted odds ratio (aOR), 3.81; 95% confidence interval (CI), 3.14-4.64), prolonged hospital stay (aOR, 5.60; 95% CI, 4.83-6.51) and elevated hospital costs (aOR, 6.14; 95% CI, 5.28-7.13). After high-risk surgery, the corresponding aORs were elevated to a lesser degree: nonhome discharge: aOR, 2.07; 95% CI, 1.81-2.38; prolonged hospital stay: aOR, 2.85; 95% CI 2.51-3.23; elevated hospital costs: aOR, 2.90; 95% CI, 2.59-3.27.

CONCLUSIONS AND RELEVANCE: Frailty has a strong independent relationship with poor short-term outcomes and increased resource utilization, which is apparent after low-risk and high-risk head and neck cancer surgery. Preoperative screening of patients to identify frailty may aid risk-stratification and improve patient counseling and selection.

AHNS-QS-103: VERACYTE/AFIRMA GEC SUSPICIOUS FOR MALIGNANCY DIAGNOSIS VS. ACADEMIC TERTIARY CARE CENTER BENIGN THYROID CYTOLOGY RESULT. WHAT'S THE RISK OF MALIGNANCY??

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Background: One reason postulated for the increase in the incidence of differentiated thyroid cancer is the liberal use of imaging modalities. Thyroid nodules are being detected more frequently and are often biopsied independent of imaging characteristics. Though the majority of nodules biopsied are benign, 8-16% turn out to be cytologically indeterminate nodules traditionally requiring at least a diagnostic thyroid lobectomy. The AFIRMA GEC test has been reported to help reduce the need for diagnostic thyroid lobectomy when reported benign. A suspicious for malignancy diagnosis carries a 40-50% risk of malignancy. We elected to review our experience with the AFIRMA GEC when it was read as suspicious for malignancy, though our in-house cytopathology review was benign, in order to help inform patients about their risk of malignancy in this situation.

Methods: Following Institutional Review Board approval, all patients who had a thyroid fine needle aspiration cytology that was reported as an AFIRMA suspicious for malignancy result by Veracyte between 2012 and 2018 were reviewed. Since all outside thyroid cytopathology is reviewed in house before surgery, those that were read as benign by our cytopthologists were then correlated with final excisional surgical pathology.

Results: 30 patients had an AFIRMA suspicious result that was read by our in-house cytopathologists as benign. Of these,15 patients underwent surgery . Of the patients that underwent surgery more than 60% of the patients were women. Most of the thyroid nodules in the study (88%) were less than 4 cm. All patients had an AFIRMA suspicious read and 9 patients(60%) underwent a thyroid lobectomy and 6 patients(60%) underwent total thyroidectomy. None of the patients experienced complications related to the surgery.

14/17 of the index nodules FNA biopsied with an AFIRMA GEC suspicious for malignancy result (82%) were benign on final histopathology. 3/17 turned out to be low risk differentiated thyroid cancer.

Conclusion: A tertiary care center with a high volume of thyroid cytopathology review is more accurate at predicting benign thyroid nodules than the Afirma GEC at predicting malignancy when reported as suspicious. Only low risk DTC was identified in the three index nodules that were incorrectly read as benign on in house cytology. Expert cytopathology review should be performed when the Afrima GEC is suspicious for malignancy and when its benign. The information should be used to help support active surveillance and thyroid lobectomy alone when clinically indicated.

AHNS-QS-104: SURVIVAL IMPACT OF TREATMENT-RELATED TIME INTERVALS IN NASOPHARYNGEAL CARCINOMA IN THE UNITED STATES

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Importance: Prolonged time to treatment and interruptions in radiation therapy (RT) are important considerations for physicians and patients with nasopharyngeal carcinoma (NPC). The National Comprehensive Cancer Network (NCCN) recommends RT to start within 6 weeks of diagnosis, with minimal interruptions in treatment. However, the survival impact of delayed or prolonged treatment remains unknown.

Objective: To determine if delayed or prolonged treatment-related time intervals (TRTIs) would impact survival in patients with NPC. The TRTIs investigated were duration of radiation treatment (RTd), time to radiation start (TTR), and time to chemotherapy start (TTC).

Design, Setting, and Participants: In this observational cohort study, 3,893 patients with NPC were identified from the National Cancer Database (NCDB).

Exposures: Patients received concurrent chemoradiation (CCRT) of at least 66 cGy and radiation treatment time of at least 40 days.

Main Outcomes and Measures: Separate univariable Cox regression model was used to analyze OS as a function of TRTIs, as well as for each Charlson-Deyo Score, T stage, N stage, histological type, ethnicity, age, sex, and facility type. Upon finding significance at $p < 0.05$, the multivariable Cox regression analysis with backward elimination was performed to yield the final prediction model. Results were considered statistically significant when $p < 0.05$.

Results: RTd was significantly associated with OS while not adjusting for other factors (HR: 1.006, 95%CI=1.004-1.008, $p<0.0001$). However, RTd was not related to OS in the multivariable analysis ($p=0.1884$). The TTR and TTC variables were not associated with OS in the univariable analysis ($p=0.8828$, $p=0.8812$).

Conclusions and Relevance: TRTIs were not independently associated with OS in this cohort of NPC patients in the NCDB. Current NCCN guidelines recommend radiation within 6 weeks, and thus the evidence of non-adherence has to be further investigated. Future research into the association of TRTI with other disease outcomes, such as disease-free survival (DFS) and locoregional control (LRC), is needed.

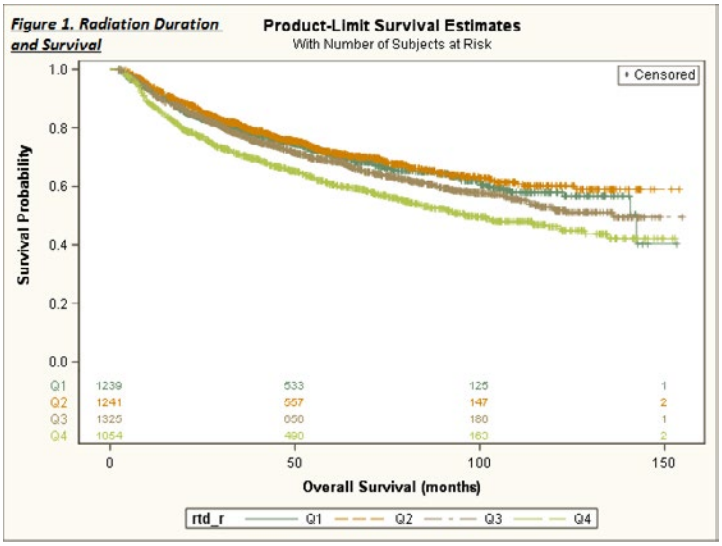

TABLE 1. Multivariable Analysis of Standard treatment (CCRT) and OS after backward elimination[c]

	Cox Proportional Hazards Regression	
Variable	**HR (95% CI)**	**p-value**
Age		<.001[a]
< 60	1(-)	Reference
60-69	1.355(1.146-1.602)	0.001[b]
≥ 70	2.19(1.762-2.721)	<.001[b]
Ethnicity		<.001[a]
White	1(-)	Reference
East Asian	0.604(0.474-0.769)	0.003[b]
Black	1.024(0.858-1.222)	0.99[b]
Others	0.615(0.478-0.792)	<.001[b]
Insurance		<.001[a]
No Insurance	1(-)	Reference
Medicaid	0.983(0.73-1.324)	0.91[b]
Medicare	1.087(0.8-1.476)	0.98[b]
Other Government	1.198(0.766-1.874)	0.93[b]
Private Insurance	0.702(0.536-0.919)	0.076[b]
CDC Score		
> 0 vs 0	1.393(1.192-1.628)	<.001[a]
cT Stage		<.001[a]
cT1	1(-)	Reference
cT2	1.228(1.019-1.48)	0.14[b]
cT3	1.433(1.177-1.746)	0.002[b]
cT4	2.277(1.908-2.717)	<.001[b]
cN Stage		<.001[a]
cN0	1(-)	Reference
cN1	0.925(0.773-1.107)	0.83[b]
cN2	1.259(1.07-1.481)	0.028[b]
cN3	1.835(1.442-2.334)	<.001[b]
Histology		<.001[a]
Keratinizing	1(-)	Reference
Non-keratinizing	0.601(0.51-0.708)	<.001[b]
Undifferentiated	0.498(0.411-0.603)	<.001[b]

HR= hazard ratio; 95%CI = 95 percent confidence interval; CDC = Charlson Deyo Comorbidity Score; cT = clinical T stage; cN = clinical N stage; RTd = duration of radiation therapy; TTR = time to radiation therapy; TTC = time to chemotherapy; [a] = p-value for overall association; [b] = Tukey-adjusted p-value for pairwise comparisons (significant if p<0.05); [c] RTd (Continuous) was removed during backward elimination (p = 0.1884).

ORAL PAPERS

AHNS-QS-105: CHARACTERISTICS OF CHRONIC OPIOID USE IN HEAD AND NECK CANCER PATIENTS UNDERGOING FREE FLAP SURGERY

Juliet Meir, MD, Kevin Keyes, BS, Kathryn Hitchcock, MD, PhD, Raja Sawhney, MD, Deepa Danan, MD, MBA, Carol Dirain, PhD, Ramzi Salloum, PhD, Amy Fullerton, SLP, Peter Dziegielewski, MD, Natalie Silver, MD, MS; University of Florida

Objectives: The current opioid crisis has highlighted concerns raised in chronic pain management. Pain related to head and neck cancer, and the sequela of undergoing major surgery followed by adjuvant treatment, poses a significant treatment challenge to providers. This study assessed the characteristics of opioid use in patients undergoing free flap surgery for previously untreated head and neck cancer, and analyzed risk factors for chronic opioid use.

Methods: A retrospective cohort study was conducted for 117 eligible patients who underwent primary resection with microvascular free flap reconstruction for squamous cell carcinoma of the head and neck, at a single institution from 2012-2017. Patients previously treated for head and neck cancer, follow-up less than 6 months, or distant metastasis at presentation were excluded. Opioid use was recorded at 3, 6 and 12 months post-operatively. Chronic opioid use was defined as the use of narcotics 3 months (or more) post-operatively. Statistical analysis was performed to assess risk factors for chronic opioid use.

Results: The average age was 63 years and mean follow-up was 22 months. All patients underwent free flap surgery for previously untreated head and neck squamous cell carcinoma of the oral cavity (68%), larynx (20%) or skin (11%). The majority of patients underwent reconstruction with radial forearm flaps (61%), followed by fibula flaps (33%) and anterolateral thigh flaps (12%). 87% of patients had stage III/IV disease, 82% received adjuvant radiotherapy (RT) or chemoradiotherapy (CRT) and there were 32 recurrences. 24 (21%) patients had pre-existing chronic pain conditions. Chronic opioid use at 3 months and 6 months post-operatively was 85% and 75% respectively. History of depression ($p=0.0293$), smoking (0.0033), oral cavity sub site ($p=0.0276$), and presence of a pre-existing chronic pain condition ($p=0.0028$) were associated with chronic opioid use. Advanced T stage, N positive disease, recurrence, adjuvant treatment modality (RT versus CRT), and free flap type were not significantly associated with chronic opioid use.

Conclusion: Chronic opioid use in head and neck cancer patients undergoing free flap surgery is highly prevalent. Given the intense treatment needed for this disease, and consequent debilitating side effects, identifying patients at greatest risk for chronic opioid use prior to treatment may help with long-term pain management in this patient population.

POSTER LISTINGS

ADVANCED IMAGING

D001: SARCOPENIA IS A PREDICTOR OF MORTALITY IN PATIENTS UNDERGOING SURGICAL EXCISION OF HEAD AND NECK CANCER
Lucas Stone[1], Brennan Olson[1], Alia Mowery[1], Stephanie Krasnow, PhD[1], Daniel Marks, MD, PhD[1], Virginie Achim, MD[2], Daniel Clayburgh, MD, PhD[1]; [1]Oregon Health and Sciences University, [2]University of Illinois-Chicago

D002: IN VIVO REAL TIME IMAGING OF HEAD AND NECK SQUAMOUS CELL CARCINOMA USING CONFOCAL MICRO-ENDOSCOPY AND APPLICABLE FLUORESCENT DYES -PRELIMINARY STUDY-
Shogo Shinohara, MD, PhD[1], Kazuo Funabiki[1], Masahiro Kikuchi[2], Shinji Takebayashi[1], Kiyomi Hamaguchi[1], Shigeo Hara[1], Daisuke Yamashita[1], Akira Mizoguchi[3]; [1]Kobe City Medical Center General Hospital, [2]Kyoto University Graduate School of Medicine, [3]Mie University Graduate School of Medicine

D003: FIRST CLINICAL EXPERIENCE WITH REAL-TIME OPTICAL SPECIMEN MAPPING IN HEAD AND NECK SQUAMOUS CELL CARCINOMA.
Stan van Keulen, Nynke van den Berg, PhD, Naoki Nishio, Eben Rosenthal, MD; Stanford University School of Medicine

D004: DEVELOPMENT OF A NOVEL CONTRAST AGENT FOR DIFFERENTIATION OF LOW GRADE AND HIGH GRADE DYSPLASIA FROM NORMAL TISSUE DURING SURGERY
Shayan Fakurnejad, BS, Stan van Keulen, MD, Nynke S van den Berg, PhD, Guolan Lu, PhD, Andrew Birkeland, MD, Brock Martin, MD, Eben Rosenthal, MD; Stanford University

D005: MAPPING TUMOR ACIDOSIS AT THE CELLULAR LEVEL IN HEAD AND NECK CANCER
Baran D Sumer, MD, Jinming Gao, PhD, Qiang Feng, PhD, Tongyi Huang, PhD, Xinyi Zhang, BS, Brittny Tillman, Eli Gordin, Larry Myers, John Truelson, Andrew Day, MD, Justin Bishop, MD; UT Southwestern Medical Center

D006: IMAGE GUIDED SURGERY USING THE PH ACTIVATED MICELLAR TRACER ONM-100: FIRST IN-HUMAN PROOF OF PRINCIPLE IN HEAD AND NECK SQUAMOUS CELL CARCINOMA
Floris J Voskuil, MD[1], Pieter J Steinkamp, MD[1], Marjory Koller, MD[1], Bert van der Vegt, MD, PhD[1], Jan J Doff, MD[1], Tian Zhao, PhD[2], Jeffrey P Hartung, PhD[2], Yalia Jayalakshmi, PhD[2], Jinming Gao, PhD[3], Max J Witjes, MD, DDS, PhD[1], Gooitzen M van Dam, MD, PhD[1], Baran D Sumer, MD, PhD[3]; [1]University Medical Center Groningen, The Netherlands, [2]OncoNano Medicine Inc., USA, [3]University of Texas Southwestern Medical Center, USA

D007: A NOVEL BIOCOMPATIBLE MARKER FOR IMAGE GUIDED TRANSORAL ROBOTIC SURGERY
Jiawei Ge, MS[1], Justin D Opfermann, MS[2], Hamed Saeidi, PhD[1], Axel Krieger, PhD[1], Arjun S Joshi, MD[3]; [1]University of Maryland College Park, [2]Children's National Health System, [3]George Washinton University

ENDOCRINE

D008: POST-THYROIDECTOMY PTH TESTING AND MISSED OPPORTUNITIES IN PREVENTING HYPOCALCEMIA: ARE WE FAILING THE TEST?
Aru Panwar, MD, FACS[1], Robert Lindau, MD, FACS[1], Harlan Sayles, MS[2], Andrew Coughlin, MD, FACS[1], Daniel Lydiatt, MD, DDS, FACS[1], Oleg Militsakh, MD, FACS[1], Angela Osmolak, MD[1], Wiliiam Lydiatt, MD, FACS[1]; [1]Methodist Estabrook Cancer Center, Nebraska Methodist Hospital, Omaha, Nebraska, [2]College of Public Health, University of Nebraska Medical Center, Omaha, Nebraska

D009: NORMOCALCEMIC PRIMARY HYPERPARATHYROIDISM: A SYSTEMATIC REVIEW AND META-ANALYSIS ON LABORATORY VALUES
Blake R Hollowoa, MD, Horace J Spencer, MS, Brendan, Jr. C Stack, MD, FACS, FACE; University of Arkansas for Medical Sciences

D010: THE EFFECT OF IV ACETAMINOPHEN ON PAIN CONTROL IN THYROID AND PARATHYROID SURGERY
Mueez Qureshi, MD[1], Catherine Lumley, MD[2], Bruce Davidson, MD, FACS[1]; [1]Georgetown University Hospital, [2]University of North Carolina Chapel Hill

D011: RETROAURICULAR THYROIDECTOMY WITH A NEXT-GENERATION SINGLE-PORT ROBOTIC SURGERY SYSTEM: PRECLINICAL STUDIES AND FIRST IN HUMAN CASE
Tyler Okland, MD[1], Myung-Chul Lee, MD[2], Kenric Tam, MD[3], Estelle Chang, MD[4], Eun Chang Choi, MD[5], Floyd Christopher Holsinger, MD[1], Yoon Woo Koh, MD[5]; [1]Stanford University, [2]Korea Cancer Center Hospital, [3]University of California -- Los Angeles School of Medicine, [4]University of Nebraska, [5]Yonsei University

D012: THYROID LOBECTOMY PROVIDES IMPROVED VALUE OVER TOTAL THYROIDECTOMY IN WELL-SELECTED PATIENTS WITH INTERMEDIATE RISK DIFFERENTIATED THYROID CARCINOMA
Olivia Do, MS1, Andrew J Thomas, MD, Richard Cannon, MD, Jason Hunt, MD, Luke Buchmann, MD, Dev Abraham, MD, Marcus M Monroe, MD, FACS, Mia Hashibe, PhD; University of Utah School of Medicine

D013: UTILITY OF PRE-OPERATIVE LOCALIZATION STUDIES IN DIAGNOSING THE INTRA-THYROIDAL PARATHYROID ADENOMA
Julia Noel, MD[1], Ida Solis, MD[2], Ramin Saket, MD[3], Peter Shen, MD[3], Mark Mamlouk, MD[3], Ryan Niederkohr, MD[3], Sumeer Gupta[2], Lisa Orloff, MD[1], Michael Friduss, MD[3]; [1]Stanford University, [2]Kaiser Permanente San Francisco, [3]Kaiser Permanente Santa Clara

D014: THE SURGICAL MANAGEMENT OF RETROPHARYNGEAL LYMPH NODE METASTASIS IN DIFFERENTIATED THYROID CARCINOMA
Victoria Harries, MBBS, Marlena McGill, BS, Laura Y Wang, MBBS, MS, Ashok R Shaha, MD, Jatin P Shah, MD, Richard J Wong, MD, R M Tuttle, MD, Snehal Patel, MD, Ian Ganly, MD, PhD; Memorial Sloan Kettering Cancer Center

D015: PREDICTIVE MODELING OF OPERATIVE TIME WITH TRANSORAL ENDOSCOPIC THYROIDECTOMY VESTIBULAR APPROACH (TOETVA)
Christopher R Razavi, MD, Lena W Chen, BA, Rohit Ranganath, MD, Ralph P Tufano, MD, MBA, Jonathon O Russell, MD; Johns Hopkins Department of OHNS

D016: LYMPH NODE RATIO AND OVERALL SURVIVAL IN PAPILLARY THYROID CANCER.
Blaine D Smith, MD, Samantha M Thomas, MS, Taofik Oyekunle, MS, Daniel J Rocke, MD, JD; Duke University Medical Center

D018: INVESTIGATING THE POTENTIAL ROLE OF ANTI-PD-L1 IMMUNOTHERAPY IN AGGRESSIVE PAPILLARY THYROID

POSTER LISTINGS

CARCINOMA
L Boven[1], S Terhoeve[1], A Gundale[1], B Beatrous[1], T Moore-Medlin[1], J McLarty[1], X Ma[1], H Savage[1], X Gu[1], R Ranganath[2], C Nathan[1]; [1]LSU Health, [2]Johns Hopkins

D019: KI-67 AND CK-19 ARE INDEPENDENT PREDICTORS OF LOCOREGIONAL RECURRENCE IN PAPILLARY THYROID CARCINOMA
Aline de Oliveira Ribeiro Viana, MD, João Gonçalves Filho, PhD, MD, Ana Lúcia Noronha Francisco, PhD, DDS, Clóvis Antônio Lopes Pinto, PhD, MD, Luiz Paulo Kowalski, PhD, MD; A C Camargo Cancer Center, Sao Paulo, Brazil

D020: THE EVOLUTION OF PAPILLARY THYROID CANCER DURING PREGNANCY.
Sriram Navuluri, Christopher M Yao, MD, Justin Tran, Mark Zafereo, MD, FACS; University of Texas MD Anderson Cancer Center

D022: USE OF OUTCOMES DATA TO STANDARDIZE MANAGEMENT OF POSTOPERATIVE HYPOCALCEMIA AFTER HEAD AND NECK ENDOCRINE SURGERY
Marcus J Magister, MD, Thomas Fitzpatrick, BS, Joshua Waltonen, MD, Brittany Henderson, MD, Christopher A Sullivan, MD; Wake Forest Baptist Medical Center

D023: THE EFFECT OF LATERAL NECK DISSECTION ON COMPLICATION RATE FOR TOTAL THYROIDECTOMY
Daniel J Rocke, MD, JD[1], Russel R Kahmke, MD[1], Hillary Mulder, MS[2], Derek Cyr, PhD[2], Kristine Schulz, DrPH, MPH[3]; [1]Duke University Medical Center, [2]Duke Clinical Research Institute, [3]Virginia Commonwealth University

D024: SURGICAL MANAGEMENT OF INTRACRANIAL METASTASIS IN DIFFERENTIATED THYROID CARCINOMA
Victoria Harries, MBBS, Marlena McGill, BS, Laura Y Wang, MBBS, MS, Ashok R Shaha, MD, Jatin P Shah, MD, Richard J Wong, MD, R M Tuttle, MD, Snehal Patel, MD, Ian Ganly, MD, PhD; Memorial Sloan Kettering Cancer Center

D025: ASSESSMENT OF OPERATIVE COMPETENCY FOR THYROIDECTOMY: A COMPARISON OF RESIDENT SELF-ASSESSMENT VS. ATTENDING SURGEON ASSESSMENT
Cory A Vaughn, MD, Brendan C Stack, Jr, MD; University of Arkansas for Medical Sciences, Department of Otolaryngology and Head and Neck Surgery

D026: THE RISKS FOR AND EFFECT OF HYPOCALCEMIA PRIOR TO DISCHARGE FOLLOWING TOTAL OR COMPLETE THYROIDECTOMY
Sina J Torabi, BA, Jonathan M Avery, BS, Parsa P Salehi, MD, Yan Lee, MD; Yale School of Medicine, Department of Surgery (Section of Otolaryngology)

D027: 4D-CT FACILITATES FOCUSED PARATHYROIDECTOMY IN PATIENTS WITH PRIMARY HYPERPARATHYROIDISM BY MAINTAINING A HIGH NEGATIVE-PREDICTIVE VALUE FOR UNINVOLVED QUADRANTS
Kaitlyn A Brooks, BS[1], Syed Hs Naqvi, MD[1], Denna A Zebda, MD[1], Arturo A Eguia, MD[1], Garren M Low, MD[1], Amy E Jacks, MD[2], Karim W Asi, BA[1], Maria O Patino, MD[3], Elliot R Friedman, MD[3], Ron J Karni, MD[1]; [1]University of Texas McGovern Medical School Department of Otorhinolaryngology- Head and Neck Surgery, [2]University of Kansas Medical Center Department of Otolaryngology- Head and Neck Surgery, [3]University of Texas McGovern Medical School Department of Diagnostic & Interventional Radiology

D028: UNDERSTANDING TRABECULAR FOLLICULAR ADENOCARCINOMA OF THE THYROID
Aakash Shah, BA[1], Neel R Sangal, BA[1], Aksha Parray, BS[1], Soly Baredes, MD, FACS[2], Richard Chan Woo Park, MD, FACS[1]; [1]Department of Otolaryngology – Head and Neck Surgery, Rutgers New Jersey Medical School, Newark, New Jersey, USA, [2]Center for Skull Base and Pituitary Surgery, Neurological Institute of New Jersey, Rutgers New Jersey Medical School, Newark, New Jersey, USA

D029: ASSESSING THE PERFORMANCE OF AFIRMA GENE EXPRESSION CLASSIFIER IN PREDICTING THE RISK OF MALIGNANCY IN INDETERMINATE THYROID NODULES
Nnenna Y Ezeilo, MD[1], Sara Wing, MD[1], Kristin Delfino, PhD[1], Jeff Wang, MD[2], Arun Sharma, MD, MS[1], Pardis Javadi, MD[1]; [1]Southern Illinois University School of Medicine, Springfield IL, [2]Memorial Medical Center, Springfield IL

D030: METABOLIC SYNDROME AND 30-DAY OUTCOMES FOLLOWING MAJOR HEAD AND NECK SURGERY
Richard D Bavier, BA[1], Nicole Farber, BA[1], Lea George, BA[1], Soly Baredes, MD, FACS[2], Richard Chan Woo Park, MD, FACS[1]; [1]Department of Otolaryngology – Head and Neck Surgery, Rutgers New Jersey Medical School, Newark, New Jersey, USA, [2]Center for Skull Base and Pituitary Surgery, Neurological Institute of New Jersey, Rutgers New Jersey Medical School, Newark, New Jersey, USA

D031: CORRELATIONS OF HASHIMOTO'S THYROIDITIS WITH PAPILLARY THYROID CANCER - A STUDY OF SURGICAL CASES
Sukamal Saha, MD, FACS, FRCS[1], Robin Buttar, BS[2], Gregory Johnston, DO[3], Alpesh Korant, MD[1], Mohamed Elgamal, MD[1], Jamal Hammoud, MD[1], Muhammad Bakleh, MD[1], Hesham Gayar, MD[1], Madan Arora, MD[1], David Wiese, MD[1]; [1]Mclaren Flint, [2]University of Michigan - Ann Arbor, [3]Mclaren Macomb

D032: COST-EFFECTIVENESS OF COMPUTED TOMOGRAPHY NODAL MAPPING IN THE PREOPERATIVE EVALUATION OF PAPILLARY THYROID CARCINOMA
Zaid Al-Qurayshi, MD, MPH[1], Emad Kandil, MD, MBA, FACS[2], Randolph W Gregory, MD, FACS[3]; [1]University of Iowa Hospitals and Clinics, [2]Tulane University School of Medicine, [3]Harvard Medical School

D033: APPLICABILITY OF DYNAMIC RISK STRATIFICATION FOR DIFFERENTIATED THYROID CANCER(DTC) IN A RESOURCE LIMITED SETTING
Karthik Munagala, Shamit Chopra, Anubha Bharthuar; Patel Super Speciality Hospital , Jalandhar , India

D034: PREDICTING MALIGNANCY RATE IN INDETERMINATE THYROID NODULES USING PATIENT DEMOGRAPHICS, NODULE FEATURES AND MOLECULAR TESTING
Guy Talmor, Medical Student, Bhavishya Clark, MD, Sheng Zhou, Medical Student, Tamara N Chambers, MD, Niels C Kokot, MD, Dennis R Maceri, MD; University of Southern California

D035: TRANSORAL ROBOTIC THYROIDECTOMY: THE ERA OF NOTES
Bikash Rai[1], Zonghui Han[1], Michelle Savu, MD[1], Bin Zhang, MD[2]; [1]Beijing united family Hospital, [2]Peking University Cancer Hospital & Institute

POSTER LISTINGS

MUCOSAL - HPV NEGATIVE

D036: TORS VERSUS LATERAL PHARYNGOTOMY FOR MANAGEMENT OF OROPHARYNGEAL CANCER
Ahmed S Ibrahim, MD, Sydney Coates, BS, Urjeet Patel, MD, Sandeep Samant, MD; Northwestern

D037: HISTOPATHOLOGIC PREDICTORS OF SURVIVAL OUTCOMES IN BUCCAL SQUAMOUS CELL CARCINOMA
John P Marinelli, BS[1], Lisa M Marinelli, BS[1], Joaquin J Garcia, MD[1], Kyriakos Chatzopoulos, MD[1], Tiffany Y Chen, MD[2], Eneida F Vencio, DDS, PhD[1], Daniel L Price, MD[1], Shahm W Raslan, BS[3], Christine M Lohse, MS[1], Jeffrey R Janus, MD[1]; [1]Mayo Clinic, [2]Department of Pathology, Brigham and Women's Hospital, Boston MA, [3]Herbert Wertheim College of Medicine

D040: ASSESSMENT OF ORAL CANCER INCIDENCE IN AN URBAN POPULATION USING GEOSPATIAL ANALYSIS: A PLATFORM FOR TARGETED SCREENING
Mihir K Bhayani[1], Marynia Kolak, PhD[2], Helena Abbey-Peak[2], Jayant Pinto, MD[2], Cheryl C Nocon, MD[1]; [1]NorthShore University HealthSystem, [2]University of Chicago

D041: IMPACT OF A TOBACCO TREATMENT PROGRAM ON ABSTINENCE RATES AND SURVIVAL AMONG CURRENT SMOKERS AT THE TIME OF PRIMARY MUCOSAL HEAD AND NECK SQUAMOUS CELL CARCINOMA DIAGNOSIS
Andrew T Day, MD, MPH[1], Kristina R Dahlstrom, PhD[2], Rebecca Lee, MS[3], Simon C Lee, PhD, MPH[1], Maher Karam-Hage, MD[2], Paul M Cinciripini[2], Erich M Sturgis, MD, MPH[2]; [1]UT Southwestern Medical Center, [2]UT MD Anderson Cancer Center, [3]UT Health Science Center at Houston

D042: AJCC 8TH EDITION ORAL CAVITY PT STAGE: SIGNIFICANT UPSTAGING WITHOUT IMPROVED PROGNOSTICATION FOR PATIENTS WITH EARLY ORAL TONGUE SQUAMOUS CELL CARCINOMA WITH HISTOLOGICALLY NEGATIVE LYMPH NODES
Shaum Sridharan, MD[1], William E Gooding[1], Lester D Thompson[2], Bibianna Purgina[3], Charles D Sturgis[4], Akeesha Shah[4], Brian Burkey[4], Madalina Tuluc[5], Manish Bundele Mahadeorao[6], Juan Hernandez-Prera[7], Dominick Guerrero[8], Bin Xu[9], Umamaheswar Duvvuri[1], Kevin Higgins[9], Seungwon Kim[1], Robert L Ferris[1], Simion I Chiosea[1]; [1]University of Pittsburgh Medical Center, [2]Southern California Permanente Medical Group, [3]The Ottawa Hospital/ University of Ottawa, [4]Cleveland Clinic, [5]Thomas Jefferson University, [6]Tan Tock Seng Hospital, [7]Moffitt Cancer Center, [8]Mount Sinai, [9]Sunny Brook Health Sciences Centre

D043: HEAD AND NECK SQUAMOUS CELL CARCINOMA AFTER BONE MARROW TRANSPLANT.
Catriona M Douglas, MD[1], Ashock R Jethwa, MD[1], Wael Hasan, MD[1], Amy Liu[2], J H Lipton[3], R Gilbert[1], D Goldstein[1], J De Almeida*[1], J Irish[1]; [1]Department of Otolaryngology – Head and Neck Surgical Oncology, University Health Network,, [2]Department of Biostatistics, Princess Margaret Cancer Centre, University Health Network and Dalla Lana School of Public Health, University of Toronto, [3]Department of Hans Messner Allogeneic Stem Cell Transplant Program, Princess Margaret Cancer Centre, University Health Network, Toronto.

D044: DISTANT METASTASIS IN ORAL SQUAMOUS CELL CARCINOMA
Daniella Karassawa Zanoni, MD[1], Pablo H Montero Miranda, MD[2], Jocelyn C Migliacci, MA[1], Marlena R McGill, BS[1], Jatin P Shah, MD[1], Richard J Wong, MD[1], Ian Ganly, MD, PhD[1], Snehal G Patel, MD[1]; [1]Memorial Sloan Kettering Cancer Center, [2]Hospital Dr. Sotero del Rio

D045: SALVAGE SURGERY FOR RECURRENT LARYNX CANCER
Ximena Mimica, MD, Ian Ganly, MD, PhD, Snehal G Patel, MD, Marlena McGill, BS, Sean M McBRide, MD, Lara A Dunn, MD, Jennifer R Cracchiolo, MD, Jatin P Shah, MD, Richard J Wong, Marc A Cohen; Memorial Sloan Kettering Cancer Center

D046: EXPLORATION OF FIRST ECHELON SENTINEL LYMPH NODE DRAINAGE OF SQUAMOUS CELL CARCINOMA OF THE TONSIL PARTICULARLY WITH REFERENCE TO THE LATERAL RETROPHARYNGEAL LYMPH NODE OF ROUVIERE
Smriti Panda, MS, Alok Thakar, MS, Suresh C Sharma, MS, V Seenu, MS, Rakesh Kumar, MD, Aanchal Kakkar, MD; All India Institute of Medical Sciences, New Delhi

D047: INFLUENCE OF SOCIOECONOMIC STATUS ON STAGE AT PRESENTATION OF LARYNGEAL CANCER IN THE UNITED STATES
Nicole L Lebo, MD, BEng[1], Diana Khalil, MD[1], Adele Balram, MPH[2], Margaret Holland, MA[2], Martin Corsten, MD[3], James Ted Mcdonald, PhD[2], Stephanie Johnson-Obaseki, MD, MPH[1]; [1]University of Ottawa, Department of Otolaryngology - Head and Neck Surgery, [2]Department of Economics, University of New Brunswick, Fredericton, NB, [3]Methodist Dallas Medical Center, Dallas, TX

D048: PREDICTORS OF PERINEURAL AND LYMPHOVASCULAR INVASION IN EARLY STAGE ORAL CAVITY AND OROPHARYNX SQUAMOUS CELL CARCINOMA (SCC)
Jonathan Cohen, MD, Keven Ji, Russel Kahmke, MD, Dan Rocke, MD, Liana Puscas, MD, John Madden, MD, Rachel Jug, MD, Samantha Thomas, PhD, Walter Lee, MD; Duke University Hospital

D049: PATTERN OF SOFT TISSUE INVASION IN ORAL SQUAMOUS CELL CANCER PREDICTS PATTERN OF MANDIBULAR INVASION
Kayvon Sharif, BA[1], Lauren Yue, BA[1], Mykayla Sandler, BA[1], John R Sims, MD[2], Fred M Baik, MD[2], Margaret Brandwein-Weber, MD[2], Azita S Khorsandi, MD[3], Ilya Likhterov, MD[2], Mark L Urken, MD[2]; [1]THANC Foundation, [2]Icahn School of Medicine at Mount Sinai, [3]New York Eye & Ear Infirmary of Mount Sinai

D050: ELECTIVE NECK DISSECTION DURING SALVAGE LARYNGECTOMY: A SYSTEMATIC REVIEW AND META-ANALYSIS
Jennifer H Gross, MD[1], Peter M Vila, MD, MSPH[1], Ryan S Jackson, MD[1], Laura Becker, MLIS[2], Patrik Pipkorn, MD, MSCI[1]; [1]Washington University Department of Otolaryngology, [2]Washington University Becker Medical Library

D051: BENZETHONIUM CHLORIDE INDUCES ER STRESS AND APOPTOSIS IN HNSCC AND REDUCES TUMOR BURDEN IN XENOGRAFT MODEL
Kerolos G Shenouda, MD[1], Yue Xi, PhD[2], Chester Gauss, BS, Candidate[3], Taha Meraj, MD[1], Mehrnoosh G Abbasabadi, BS, Candidate[3], Ho-Sheng Lin, MD[1], Andrew M Fribley, PhD[3]; [1]Wayne State University School of Medicine, Department of Otolaryngology, Detroit, MI, [2]Carmen and Ann Adams Department of Pediatrics, Children's Hospital of Michigan, Detroit, MI, [3]Wayne State University School of Medicine, Detroit, MI

D052: MULTIPLEXED IMMUNOFLUORESCENCE AND MULTISPECTRAL IMAGING-BASED QUANTIFICATION OF TUMOR AND IMMUNE CELL POPULATIONS REVEALS SPATIAL RELATIONSHIPS IN ORAL CAVITY SQUAMOUS CELL CARCINOMA

POSTER LISTINGS

Anuraag S Parikh, MD[1], Joao P Oliveira-Costa, DMD, PhD[2], Linda Neiman, PhD[2], Derin Sevenler, PhD[2], Doyeon Koo, MS[2], Chenyue Lu[2], Itay Tirosh, PhD[3], William C Faquin, MD, PhD[1], Jeremy D Richmon, MD[1], Kevin S Emerick, MD[1], Daniel G Deschler, MD[1], Mark A Varvares, MD[1], Derrick T Lin, MD[1], Bradley E Bernstein, MD, PhD[2], Shannon Stott, PhD[2], Sidharth V Puram, MD, PhD[4]; [1]Massachusetts Eye and Ear Infirmary, [2]Massachusetts General Hospital, [3]Weizmann Institute, [4]Massachusetts Eye and Ear Infirmary, Ohio State University

D053: CLINICAL OUTCOMES RELATED TO HEAD AND NECK CANCER CELL LINE VIABILITY
Kevin J Kovatch, MD[1], John H Owen, MS[1], Andrew C Birkeland, MD[2], Rebecca C Hoesli, MD[1], Nicolas Burger, BS[1], Emily L Bellile, MS[1], Steven B Chinn, MD[1], J Chad Brenner, PhD[1], Mark E Prince, MD[1], Thomas E Carey, PhD[1], Keith A Casper, MD[1]; [1]Michigan Medicine, [2]Stanford University

D054: NSD1 IS A BIOMARKER OF SURVIVAL IN HPV-NEGATIVE HEAD AND NECK SQUAMOUS CELL CARCINOMA
Farhad Ghasemi[1], Stephanie D Prokopec[2], Danielle MacNeil, MD, MSc[1], Neil Mundi, MD[1], Nicole Pinto, MSc[1], Kara M Ruicci, PhD[1], Mohammad Imran Khan, PhD[1], Kevin Fung, MD[1], John Yoo, MD[1], John W Barrett[1], Paul C Boutros, PhD[2], Anthony C Nichols, MD[1]; [1]Western University, [2]University of Toronto

D055: GENOMIC AND HUMAN PAPILLOMAVIRUS PROFILING OF AN ORAL CANCER COHORT IDENTIFIES TP53 AS A PREDICTOR OF OVERALL SURVIVAL
Neil Mundi, MD[1], Stephenie Prokopec[2], Farhad Ghasemi, BSc[1], Andrew Warner, MSc[1], John Yoo, MD[1], Kevin Fung, MD[1], Danielle Macneil, MD[1], David Palma, MD, PhD[1], John W Barrett, PhD[1], Anthony C Nichols, MD[1]; [1]Western University, [2]Ontario Institute for Cancer Research

D057: LYMPH NODE YIELD RATIO AS A PREDICTOR OF SURVIVAL IN ORAL CAVITY SQUAMOUS CELL CARCINOMA
Emily Marchiano, MD[1], Andrew C Birkeland, MD[2], Keith A Casper, MD[1], Andrew G Shuman, MD[1], J. Chad Brenner, PhD[1], Matthew E Spector, MD[1], Steven B Chinn, MD, MPH[1]; [1]University of Michigan, [2]Stanford University

D058: PRIMARY LARYNGECTOMY VERSUS SALVAGE LARYNGECTOMY: A COMPARISON OF THE FUNCTIONAL AND ONCOLOGIC OUTCOMES
Christopher B Sullivan, MD[1], Katherine Ostedgaard, MD[2], Steven Sperry, MD[3]; [1]University of Iowa, [2]University of California at Davis, [3]Department of Otolaryngology ? Head and Neck Surgery, Aurora St. Luke?s Medical Center

D059: HEAD AND NECK CANCER DEMONSTRATES SUBSTANTIAL CHANGES IN LIPID METABOLISM.
James A Higginson[1], Gavin R Lloyd[2], Andris Jankevics[2], Martin R Jones[3], Rachel Spruce[1], Anthony Kong[1], Ralf J Weber[2], Hisham Mehanna[1], Andrew D Southam[2], Nikolaos Batis[1]; [1]Institute of Cancer and Genomic Sciences, University of Birmingham, [2]Phenome Center Birmingham, School of Biosciences, University of Birmingham, [3]School of Biosciences, University of Birmingham

D060: PROGNOSTIC FACTORS RELATED TO THE NECK METASTASIS OF ORAL CANCER.
Hugo F Kohler, MD, Genival B Carvalho, MD, PhD, Luiz P Kowalski; A C Camargo Cancer Center

D061: LARYNGEAL CANCER IN YOUNG- AND MIDDLE-AGED PATIENTS: AN EVALUATION OF RISK FACTORS, HPV STATUS AND OUTCOMES
Calvin X Geng, MS, Priscilla Tanamal, MS, Ellen Wang, MD, Simone Arvisais-Anhalt, MD, Justin Bishop, MD, Baran Sumer, MD, John Truelson, MD, Larry Myers, MD, Brittny Tillman, MD, Lenka Stankova, MD, Eli Gordin, MD, Kathleen Tibbetts, MD, Ted Mau, MD, Lesley Childs, MD, Andrew T Day, MD, MPH; UT Southwestern

D062: OUTCOMES FOR THE TREATMENT OF RECURRENT NASOPHARYNGEAL CANCER: A SYSTEMATIC REVIEW AND POOLED ANALYSIS
Ethan Newton, MD, BSc[1], Dianne Valenzuala, MD, BSc[1], Joshua Foley, BSc[2], Eitan Prisman, MD, MA, FRCSC[1], Andrew Thamboo, MD, FRCSC, MHSc[1]; [1]University of British Columbia, Department of Otolaryngology Head and Neck Surgery, [2]University of British Columbia Faculty of Medicine

D063: BEYOND DEPTH OF INVASION: ADVERSE PATHOLOGIC TUMOR FEATURES IN EARLY ORAL TONGUE SQUAMOUS CELL CARCINOMA
Andrew Larson, MD, Emily Chan, MD, PhD, Jacquelyn Kemmer, BA, Patrick Ha, MD, Jonathan George, MD, William Ryan, MD, Chase Heaton, MD; University of California, San Francisco

D064: EVALUATION OF OVERALL SURVIVAL USING NUMBER OF NODES FOR PATHOLOGIC STAGING IN P16-NEGATIVE HEAD AND NECK CANCER
Andrew J Coniglio, MD, Douglas R Farquhar, MD, Siddharth Sheth, MD, Maheer M Masood, Samip Patel, MD, Adam M Zanation, MD, Mark C Weissler, MD, Andrew F Olshan, PhD, Samip N Patel, MD, Trevor G Hackman, MD; University of North Carolina

D065: SURVIVAL IN PATIENTS WITH HEAD AND NECK MUCOSAL MELANOMA
Felipe Cardemil, MD, Lily Wang, David Goldstein, MD, Anna Spreafico, MD, Andrew Bayley, MD, Ralph Gilbert, MD, Jonathan Irish, MD, Dale Brown, MD, Douglas Chepeha, MD, Patrick Gullane, MD, John de Almeida, MD; University of Toronto

D066: UPFRONT SURGERY HAS A BETTER OUTCOME IN OROPHARYNGEAL CANCER HPV- POPULATION
Mohamed A Shama, MD, MRCS, EBSQ, Mohamed Dahl, BVMS, MSc, PhD, Natalie Silver, MD, Peter T Dziegielewski, MD, FRCSC, Deepa Danan, MD; University of Florida

MUCOSAL - HPV POSITIVE

D067: DEVELOPMENT AND IMPLEMENTATION OF A TUMOR-SPECIFIC RNA PHENOTYPING STRATEGY TO GUIDE PATIENT THERAPY IN HEAD AND NECK SQUAMOUS CELL CARCINOMAS
Wesley H Stepp, PhD[1], Asim Lail, BS[1], Douglas Farquhar, MD[1], Travis Schrank, MD, PhD[1], Angela Mazul, PhD[2], D. Neil Hayes, MD[3], Jose P Zevallos, MD[2], Trevor G Hackman, MD[1]; [1]University of North Carolina, [2]Washington University in Saint Louis, [3]University of Tennessee Health Science Center

D068: CANCER IN A DISH: ISOLATION, EXPANSION AND DRUG SCREENING OF HPV-POSITIVE OROPHARYNGEAL TUMORS IN CELL CULTURE
Wesley H Stepp, PhD[1], Travis P Schrank, MD, PhD[1], Natalia Issaeva,

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PhD[1], Alison A McBride, PhD[2], Trevor G Hackman, MD[1], Wendell G Yarbrough, MD[1]; [1]University of North Carolina, [2]National Institute of Allergy and Infectious Diseases

D069: A NEXT-GENERATION SINGLE-PORT ROBOTIC SURGICAL SYSTEM: RESULTS FROM PROSPECTIVE CLINICAL TRIALS TO EVALUATE ITS USE IN THE TRANSORAL H&N SURGERY OF THE OROPHARYNX
F. Christoper Holsinger, MD[1], J. Scott Magnuson[2], Gregory S. Weinstein, MD[3], Jason Y.K. Chain[4], Raymond Tsang[5], Eddie Wong[4], Christopher Rassekh, MD[3], Nikita Bedi[1], Steven S.Y. Hong, MD[1], Ryan Ryan Orosco, MD[1], Bert O'Malley, MD[3], Eric J Moore, MD[6]; [1]Stanford University, [2]Celebration Hospital Florida; Univeristy of Central Florida, [3]University of Pennsylvania, [4]Chinese University of Hong Kong, [5]Hong Kong University, [6]Mayo Clinic, Rochester

D070: SENTINEL LYMPH NODE BIOPSY FOR MANAGEMENT OF THE NO NECK IN ORAL CAVITY SQUAMOUS CELL CARCINOMA
John Loree, BA[1], Saurin Popat, MD, MBA[2], Mark S Burke, MD[2], Jennifer Frustino, DDS, PhD[2], Jeewanjot Grewal, BS[1], Thom R Loree, MD[2]; [1]SUNY Upstate Medical University, [2]University of Buffalo

D071: ASSESSING THE POTENTIAL FOR SUPERSELECTIVE NODAL DISSECTION IN RECURRENT HPV+ OROPHARYNGEAL SQUAMOUS CELL CARCINOMAS
Nicholas R Oberlies[1], Aarti Kumar[1], Thomas M Kaffenberger, MD[2], William G Albergotti, MD[3], Seungwon Kim, MD[2]; [1]University of Pittsburgh School of Medicine, [2]Department of Otolaryngology, University of Pittsburgh School of Medicine, [3]Department of Otolaryngology, Augusta University

D072: PROPHYLACTIC ARTERIAL LIGATION FOLLOWING TORS: A SYSTEMATIC REVIEW AND META-ANALYSIS
Craig A Bollig, MD[1], David Gilley, MD[1], Jumah Ahmad, BS[1], Jeffrey Jorgensen, MD[2]; [1]University Of Missouri, [2]University of Louisville

D073: EVALUATION OF TUMOR STAGE CRITERIA IN THE EIGHT EDITION AMERICAN JOINT COMMITTEE ON CANCER STAGING FOR HUMAN PAPILLOMA VIRUS-ASSOCIATED OROPHARYNGEAL CANCER
Julian Amin, MD[1], Amal Isaiah, MD, PhD[1], James W Snider, MD[2], Kyle Hatten, MD[1]; [1]University of Maryland Medical Center, Department of Otorhinolaryngology--Head and Neck Surgery, [2]University of Maryland Medical Center, Department of Radiation Oncology

D074: UTILIZATION OF MACHINE LEARNING TO PREDICT EXTRACAPSULAR EXTENSION IN HPV-ASSOCIATED OROPHARYNGEAL CANCER
Julian Amin, MD[1], Amal Isaiah, MD, PhD[1], James W Snider, MD[2], Kyle Hatten, MD[1]; [1]University of Maryland Medical Center, Department of Otorhinolaryngology--Head and Neck Surgery, [2]University of Maryland Medical Center, Department of Radiation Oncology

D075: DOES HPV SUBTYPE PREDICT OUTCOMES IN HEAD AND NECK CANCERS?
Hedyeh Ziai, MD[1], John Barrett, PhD[2], Anthony C Nichols[2]; [1]University of Toronto, [2]Western University

D076: SOCIOECONOMIC DISPARITIES IN ORAL CAVITY CANCER TREATMENT AND SURVIVAL
Daniel P Ballard, MD[1], Xiaoyue Ma, MS[2], Stefan Mlot, MD[1]; [1]SUNY Downstate Medical Center, [2]Department of Healthcare Policy and Research, Weill Cornell Medical Center

D077: LOCATING THE FACIAL ARTERY AND ITS PALATINE BRANCHES IN THE PARAPHARYNGEAL SPACE
Aziza Mohamed, MSc[1], Vinidh Paleri, MBBS, MS, FRCS, ORLHNS, FRCS, CSiG[2], Ajith George, MBChB, FRCS, ORLHNS[3]; [1]Keele University Medical School, North Staffordshire, United Kingdom, [2]Royal Marsden Hospital, London, England, United Kingdom, [3]University Hospitals North Midlands, North Staffordshire, England, United Kingdom

D078: GASTROSTOMY UTILIZATION BY INTERMEDIATE RISK OROPHARYNGEAL CANCER PATIENTS IS NOT DRIVEN BY SWALLOWING DYSFUNCTION ASCERTAINED VIA OBJECTIVE DIGEST CRITERIA AND PERCEIVED DYSPHAGIA MDADI SCORES
Aaron Harms[1], Sagar Kansara, MD[1], Madeline Vernese[2], Allison Starr[2], Carol Stach[2], David Hernandez, MD[1], Vlad C Sandulache, MD[1]; [1]Baylor College of Medicine, [2]Michael E. DeBakey VA Medical Center

D079: PRIMARY NASAL SEPTAL SQUAMOUS CELL CARCINOMAS SHOW HIGH PREVALENCE OF TRANSCRIPTIONALLY ACTIVE HIGH-RISK HUMAN PAPILLOMAVIRUS: SERIES OF 8 CASES FROM A TERTIARY CARE CENTER
Emilija Todorovic, MD, Eitan Prisman, MD, FRCSC, Scott Durham, MD, FRCSC, Donald Anderson, MD, FRCSC, Christine Chow, BSc, Tony Ng, MD, PhD, FRCPC; University of British Columbia

D080: DOES SYSTEMIC THERAPY IMPROVE THE OUTCOME OF SURGICALLY TREATED HPV-ASSOCIATED SQUAMOUS CELL CARCINOMA OF THE OROPHARYNX WITH MICROSCOPIC EXTRANODAL EXTENSION?
Christopher M Yao, MD[1], Samantha Tam, MD, MPH[1], Rachel Triestman[1], Mona Gajera[1], Ahnshu Khanna, MPH[1], Ryan Goepfert, MD[1], Amy Hessel, MD[1], Christopher F Holsinger, MD[2], Michael Kupferman, MD, MBA[1], Diana Bell, MD[1], Michelle D Williams, MD[1], Adel K El-Naggar, MD, PhD[1], Neil D Gross, MD[1]; [1]University of Texas MD Anderson Cancer Center, [2]Stanford University Medical Center

D081: SURVIVAL OUTCOMES OF MARIJUANA USERS IN P16 POSITIVE OROPHARYNX CANCER PATIENTS.
Han Zhang, MD, FRCSC, Michael Xie, BSc, Marc Levin, BSc, Stuart D Archibald, MD, FRCSC, B. Stanley Jackson, MD, FRCSC, J. E. M. Young, MD, FACS, FRCSC, Michael K Gupta, MD, MSc, FRCSC; McMaster University

D082: EFFECT OF HPV STATUS ON SURVIVAL OF OROPHARYNX CANCER WITH DISTANT METASTASIS
Jeffrey Liu, MD[1], Thomas J Galloway, MD[2], Mihir K Bhayani[3]; [1]Temple Univ/Fox Chase Cancer Center, [2]Fox Chase Cancer Center, [3]NorthShore University Health System

D084: MORBID OBESITY, PSYCHIATRIC DISEASE, AND ALCOHOL USE ASSOCIATED WITH DISTANT METASTASIS AND CANCER RELATED DEATH IN OROPHARYNGEAL SQUAMOUS CELL CARCINOMA
Linda X Yin, MD[1], Daniel L Price, MD[1], Cassandra L Puccinelli, MD[1], Eric J Moore, MD[1], Katharine A Price, MD[2], Dan J Ma, MD[3], Kathryn M Van Abel, MD[1]; [1]Department of Otolaryngology-Head and Neck Surgery, Mayo Clinic, Rochester, MN 55905 USA, [2]Department of Medical Oncology, Mayo Clinic, Rochester, MN 55905 USA, [3]Department of Radiation Oncology, Mayo Clinic, Rochester, MN 55905 USA

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D085: NEOADJUVANT CHEMOTHERAPY FOLLOWED BY SURGERY-BASED PARADIGM VERSUS CONCOMITANT CHEMORADIATION FOR P16 POSITIVE LOCOREGIONALLY ADVANCED OROPHARYNGEAL CANCER
Marco A Mascarella, MD, MSc[1], Sarah Khalife, MD[1], Agnihotram V Ramanakumar, PhD[2], Keith Richardson, MD, FRCSC[1], Robert Siegel, MD[3], Arjun Joshi, MD, FACS[3], Nathaniel Bouganim, MD, FRCPC[1], Reza Taheri, MD, PhD[3], Andrew Fuson, MD[3], Nader Sadeghi, MD, FRCSC[1]; [1]McGill University, [2]Research Institute of McGill University Health Center, [3]George Washington University

D086: EARLY AND LATE SWALLOWING OUTCOMES FOLLOWING TRANSORAL ROBOTIC SURGERY
Michael C Topf, MD, Swar Vimawala, BS, Nikola Kocovic, BS, Ramez Philips, MD, Dylan Roden, MD, Kelly Salmon, MA, CCCSLP, Adam Luginbuhl, MD, Joseph M Curry, MD, David M Cognetti, MD; Thomas Jefferson University Hospital

D088: PROPORTION OF PATIENTS REQUIRING GASTROSTOMY TUBES (G-TUBE) FOR VARYING TREATMENT MODALITIES IN OROPHARYNGEAL SQUAMOUS CELL CARCINOMA.
Erin Harvey[1], David L Choi, MD[1], Javier Howard[1], Daniel Saadeh[1], Vinita Takiar[1], Meredith Tabangin[2], Mekibib Altaye[2], Alice L Tang, MD[2]; [1]University of Cincinnati College of Medicine, [2]Cincinnati Children's Hospital Medical Center

D089: DURATION OF G-TUBE PRESENCE IN A 5-YEAR COHORT OF PATIENTS WITH HEAD AND NECK CANCER TREATED WITH CURATIVE INTENSITY-MODULATED RADIOTHERAPY
Elissa Greco, MSLP[1], J Ringash, MD[2], G Tomlinson, PhD[3], S Huang, MD[2], B O'Sullivan, MD[2], J Waldron, MD[2], R Martino, PhD[1]; [1]Rehabilitation Sciences Institute, University of Toronto, [2]Department of Radiation Oncology, Princess Margaret Cancer Centre/University of Toronto, Toronto, Ontario, Canada, [3]Department of Medicine, University Health Network/ Mount Sinai Hospital

D090: IMPACT OF SINGLE NODE METASTASIS IN TRANSORALLY RESECTED HPV-RELATED SQUAMOUS CELL CARCINOMA OF THE OROPHARYNX
Stephanie Y Chen, MD[1], Aisling Last, BS[1], Dorina Kallogjeri, MD, MPH[1], Joseph Zenga, MD[2], Katheryn Van Able, MD[3], Eric J Moore, MD[3], Patrik Pipkorn, MD[1], Ryan S Jackson, MD[1]; [1]Washington University at St. Louis, [2]Medical College of Wisconsin, [3]Mayo Clinic

D091: THE ASSOCIATION OF SMOKING AND OUTCOMES IN HPV-POSITIVE OROPHARYNGEAL CANCER
Stephanie Y Chen, MD, Dorina Kallogjeri, MD, MPH, Lauren Yaeger, MA, MLIS, Jose P Zevallos, MD, MPH, FACS, Patrik Pipkorn, MD; Washington University in St. Louis

D092: INDUCTION?CHEMOTHERAPY FOR P16+ OPSCC FOLLOWED BY TORS/NECK DISSECTION: BIOLOGICAL RESPONSE ALLOWS DOWN-STAGING OF TUMOR AND DEFINITIVE SURGICAL MANAGEMENT
Joseph Goodman, MD, Sahil Patel, Ning Wei Li, MD, Punam Thakkar, MD, Arjun Joshi, MD; The George Washington University

D093: OROPHARYNGEAL CANCER: DIFFERENCES IN SURVIVAL, PATTERNS OF FAILURE, SECOND PRIMARY MALIGNANCIES AND RISK FACTORS FOR SECONDARY EVENTS BASED ON HPV STATUS
Ryan Holstead, MD, Rehana Rasul, MPH, Anne Golden, PhD, Doru Paul, MD, Steven Savona, MD, Priscila Goncalves, MD, Douglas Frank, MD, Dev Kamdar, MD, Lucio Pereira, MD, Maged Ghaly, MD, Jed Pollack, MD, Sewit Teckie, Nagashree Seetharamu, MD; Donald and Barbara Zucker School of Medicine at Hofstra/ Northwell

D094: PATTERNS AND OUTCOMES OF ADJUVANT RADIOTHERAPY IN SURGICALLY TREATED HPV-POSITIVE OROPHARYNGEAL CARCINOMA WITH ADVERSE FEATURES
Farhoud Faraji, MD, PhD[1], Kayva Crawford, MD[1], Kevin T Brumund, MD[1], Charles S Coffey, MD[1], Carole Fakhry, MD, MPH[2], Joseph A Califano, MD[1], Ryan K Orosco, MD[1]; [1]University of California San Diego, [2]Johns Hopkins University

D095: COST EFFECTIVENESS ANALYSIS OF CT SURVEILLANCE VERSUS PET GUIDED NECK MANAGEMENT VS. EARLY NECK DISSECTION FOR TNM-7 N2 AND N3 HPV POSITIVE OROPHARYNGEAL CANCER POST CHEMORADIOTHERAPY
Patrick Scheffler, MDCM, Shao Hui Huang, MD, MSc, FRCPC, Andrew Bayley, MD, FRCPC, John Waldron, MD, FRCPC, Brian O'Sullivan, MB, BCh, BAO, FRCPC, Eric Monteiro, MD, MSc, FRCSC, David Goldstein, MD, MSc, FRCSC, John R De Almeida, MD, MSc, FRCSC; University of Toronto

D096: MUTATIONAL BURDEN AND DNA DAMAGE REPAIR GENE DEFECTS IN RECURRENT HUMAN PAPILLOMAVIRUS-RELATED OROPHARYNGEAL SQUAMOUS CELL CARCINOMA
Richard A Harbison, MD, MS[1], Daniel Faden, MD[2], Qing Zhao[3], Umamheswar Duvvuri, MD, PhD[4]; [1]University of Washington, [2]Massachusetts Eye and Ear Infirmary, [3]Fred Hutchinson Cancer Research Center, [4]University of Pittsburgh

D097: THE ROLE OF CLINICAL VOLUME ON MARGIN STATUS IN TRANSORAL SURGERY FOR OROPHARYNGEAL SQUAMOUS CELL CARCINOMA: HOW MANY CASES IS ENOUGH?
Ernest D Gomez, MD, MTR, Jason A Brant, MD, Steven B Cannady, ND, Jason G Newman, Christopher H Rassekh, MD, Bert W O'Malley, Jr., MD, Gregory S Weinstein, MD; University of Pennsylvania

D098: THE ROLE OF INDUCTION CHEMOTHERAPY IN HPV-ASSOCIATED OROPHARYNGEAL CANCER
Bhargava Chitti, BS, Punam Thakkar, MD, Yuan J Rao, MD, Collin F Mulcahy, MD, Joseph Goodman, MD, Luke Pasick, Arjun Joshi, MD; George Washington University

D099: SURVIVAL BENEFIT OF CHEMOTHERAPY IN OROPHARYNGEAL CANCER PATIENTS TREATED WITH SURGERY AND POSTOPERATIVE RADIOTHERAPY
Fawaz M Makki, MD, MSc, FRCSC[1], Ashley V Hinther, MD, Msc[2], Faith Davis, PhD, FACE[3], Daniel A O'Connell, MD, MSc, FRCSC[1], Lakshi Puttagunta, MD[4], Jeffrey Harris, MD, FRCPC[1], Hadi Seikaly, MD, MAL, FRCSC[1], Vincent L Biron, MD, PhD, FRCSC[1]; [1]Division of Otolaryngology Head and Neck Surgery, Department of Surgery, University of Alberta, [2]Division of Otolaryngology- Head and Neck Surgery, Department of Surgery, Cumming School of Medicine, University of Calgary, [3]School of Public Health, University of Alberta, [4]Department of Laboratory Medicine and Pathology, University of Alberta

D100: EVALUATION OF THE PROGNOSTIC UTILITY OF THE LYMPH NODE RATIO IN PREDICTING OROPHARYNGEAL SQUAMOUS CELL CARCINOMA RECURRENCE WHEN STRATIFIED BY P16 STATUS
Margaret C Nurimba, BA, Niels Kokot, MD, William Hines, BS, Mark Swanson, MD; University of Southern California

D101: SALIVARY DETECTION OF THE MUCOSAL IMMUNE RESPONSE TO HUMAN PAPILLOMA VIRUS (HPV) VACCINATION
Margaret C Nurimba, BA, Diane Da Silva, PhD, W. Martin Kast,

POSTER LISTINGS

PhD, Uttam K Sinha, MD; University of Southern California

D102: CORRELATION OF PROXIMITY TO MIDLINE WITH CONTRALATERAL CERVICAL METASTASES IN HPV+ BASE OF TONGUE SQUAMOUS CELL CARCINOMA
Scott R Hall, MD[1], Lindsey B Stull, MD[1], Gregory S Neel, MD[1], Michael L Hinni, MD[1], Joseph M Hoxworth, MD[2], Thomas H Nagel, MD[1]; [1]Mayo Clinic Arizona Department of Otolaryngology - Head and Neck Surgery, [2]Mayo Clinic Arizona Department of Radiology

D103: LONG-TERM SWALLOWING OUTCOMES AFTER TREATMENT FOR OROPHARYNGEAL CARCINOMA: COMPARISON OF TRANSORAL ROBOTIC SURGERY TO DEFINITIVE RADIATION TREATMENT
David Kim, MD, Andrew Palmer, PhD, Rachel Bolognone, Donna Graville, PhD, John Holland, MD, Ryan Li, MD, Peter Andersen, MD, Daniel Clayburgh, MD, PhD; Oregon Health and Science University

D104: INFLUENCE OF NODAL YIELD ON SURVIVAL IN EARLY T-STAGE OROPHARYNGEAL SQUAMOUS CELL CARCINOMA
Joseph Zenga[1], Becky Massey, MD[1], Michael Stadler, MD[1], Bruce Campbell, MD[1], Christopher Schultz, MD[1], Musaddiq Awan, MD[1], Monica Shukla, MD[1], Stuart Wong, MD[1], Ryan Jackson, MD[2], Patrik Pipkorn, MD[2]; [1]Medical College of Wisconsin, [2]Washington University School of Medicine

D105: SPARING RADIATION TO THE PRIMARY AFTER TRANS-ORAL ROBOTIC SURGERY (TORS): EARLY LOCAL CONTROL
Mihir R Patel, MD[1], Annie Farrell[2], H. Michael Baddour, MD[1], Kelly Magliocca, MD[3], Christopher C Griffith, MD, PhD[3], Mark McDonald, MD[4], Kristin Higgins, MD[4], Patricia Hudgins, MD[5], Ashley Aiken[5], Mark W El-Deiry[1], C. Arturo Solares[1], Nabil Saba[6], Jonathan J Beitler[4]; [1]Winship Cancer Institute at Emory University, [2]Emory University School of Medicine, [3]Emory University Dept. of Pathology, [4]Emory University Dept. of Radiation Oncology, [5]Emory University Dept. of Radiology, [6]Emory University Dept. of Medical Oncology

D106: PATIENT OUTCOMES AND LATERAL NECK DISSECTION VOLUMES: A RETROSPECTIVE ANALYSIS UTILIZING THE STATE INPATIENT DATABASE
James C Campbell, BA[1], Hui-Jie Lee, PhD[2], Sarah N Morton[2], Daniel J Rocke, MD, JD[3]; [1]Duke University School of Medicine, [2]Department of Biostatistics and Bioinformatics, Duke University Medical Center, [3]Department of Surgery, Division of Head & Neck Surgery & Communication Sciences, Duke University Medical Center

OTHER

D108: THE CDK4/6 INHIBITOR PALBOCICLIB DEMONSTRATES EFFICACY ALONE AND IN COMBINATION WITH RADIATION IN HPV-NEGATIVE HEAD AND NECK SQUAMOUS CELL CARCINOMA
Cory D Fulcher[1], Daniel Li[2], Carlos Thomas[3], Nick Ranellone[4], Nicholas Gadsden[2], Michael Prystowsky[3], Thomas J Ow[1]; [1]Otorhinolaryngology-Head and Neck Surgery, Montefiore Medical Center/Albert Einstein College of Medicine, [2]Montefiore Medical Center/Albert Einstein College of Medicine, [3]Pathology, Montefiore Medical Center/Albert Einstein College of Medicine, [4]The University of Alabama

D109: THE MICROBIOME AS A BIOMARKER IN HEAD AND NECK SQUAMOUS CELL CARCINOMA
Jason Chan, Paul Chan, Zigui Chen; The Chinese University of Hong Kong

D111: NON-SQUAMOUS CELL MALIGNANCIES OF THE LARYNX
Janine M Rotsides, MD, Lindsey Moses, MD, Jamie Oliver, BS, Zujun Li, MD, Kenneth S Hu, MD, Babak Givi, MD; NYU Langone Health

D112: DIAGNOSTIC SIGNIFICANCE OF CIRCULATING TUMOR CELLS IN PATIENTS WITH THYROID NODULES
Jie Liu, PhD; Department of Head and Neck Surgery, National Cancer Hospital, National Clinical Research Center for Cancer, Chinese Academy of Medical Sciences and Peking Union Medical College, Beijing, China

D113: SWALLOWING OUTCOMES IN PATIENTS UNDERGOING PRIMARY CHEMORADIATION FOR OROPHARYNGEAL SQUAMOUS CELL CARCINOMA
Paul G van der Sloot, MD, Weitao Wang, MD, Catherine Cook, SLP; University of Rochester Medical Center

D114: EVALUATION OF OLDER AGE AND FRAILTY AS PREDICTORS OF POST-OPERATIVE DECISION REGRET.
Carissa M Thomas, MD, PhD[1], Jie Su, MSc[2], Wei Xu, PhD[2], John de Almeida, MD[1], Patrick Gullane, MD[1], Ralph Gilbert, MD[1], Dale Brown, MD[1], Jonathan Irish, MD[1], Shabbir Alibhai, MD[1], David Goldstein, MD[1]; [1]University of Toronto, [2]Princess Margaret Hospital

D115: METASTATIC SPREAD TO PERCUTANEOUS ENDOSCOPIC GASTROSTOMY SITE IN PATIENTS WITH HEAD AND NECK CANCER: A SYSTEMATIC REVIEW
Jennifer M Siu, Kaitlyn Fuller, Danny Enepekides, Irene Karam, Kelvin Chan, Simron Singh, Ian Poon, Kevin Higgins, Bin Xu, Antoine Eskander, Ashley Nadler; University of Toronto

D116: RELIABILITY OF REAL-TIME GRADING OF DYSPHAGIA SEVERITY (PER DIGEST) BY SPEECH PATHOLOGISTS CONDUCTING VIDEOFLUOROSCOPIC SWALLOW STUDIES
K Hutcheson, PhD, C Warneke, MS, C Alvarez, MS, D Barringer, MS, J Knott, MS, J S Lewin, PhD; MD Anderson Cancer Center

D117: A 10-YEAR REVIEW OF PRE-TERTIARY HOSPITAL MANAGEMENT OF NEOPLASTIC NECK SWELLINGS: THE NEED FOR AN APPRAISAL IN A NORTHWESTERN NIGERIA
Mohammed Abdullahi, MBBS, FWACS, Stanley Amutta, MBBS, FWACS; Usman Danfodiyo University Teaching Hospital,Sokoto, Nigeria

D118: THE ROLE OF LONG NON-CODING RNAS IN HEAD AND NECK CANCER
Frank S Chen, MD, PhD, Daniel Quan, Yue Xi, PhD, Raza Syed, MD, Andrew Fribley, PhD; Wayne State School of Medicine

D119: CHRONIC OPIOID USE AFTER TREATMENT OF LARYNGEAL CANCER
Nicole C Craker, MD, MPH, Douglas R Oyler, PharmD, Aric Schadler, MS, Rony K Aouad, MD; University of Kentucky

D120: ADVANCED TREATMENT PLANNING FOR INTERSTITIAL PHOTODYNAMIC THERAPY IN PATIENTS WITH REFRACTORY LOCALLY ADVANCED CANCER - FROM THE CLINIC TO BENCH AND BACK
Emily Oakley, Hassan Arshad, David Bellnier, Barbara Henderson,

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Gal Shafirstein; Roswell Park Comprehensive Cancer Center

D121: PROGNOSTIC FACTORS IN PATIENTS PRESENTING WITH SQUAMOUS CELL CARCINOMA OF THE LARYNX, A SINGLE CENTER REVIEW
Yuval Nachalon, MD, Yael Reicher, MD, Uri Alkan, MD, Lirit Levi, MD, Gideon Bachar, MD, Aron Popovtzer, MD; Rabin Medical Center, Petach Tikva, Israel

D122: GENDER AS A PROGNOSTIC INDICATOR OF OVERALL SURVIVAL IN HEAD AND NECK SQUAMOUS CELL CARCINOMA
Akash N Naik, MD[1], Kevin Y Zhan, MD[1], Angela L Mazul, PhD, MPH[2], Sidharth V Puram, MD, PhD[1]; [1]The Ohio State University, [2]Washington University in St. Louis

D124: OUT-OF-POCKET COSTS ASSOCIATED WITH THE TREATMENT OF HEAD AND NECK CANCER
M N Khan, MD, K Hueniken, L Eng, G Liu, D Goldstein, MD, J Dealmeida; University of Toronto

D125: UNDERSTANDING PSEUDOSARCOMATOUS CARCINOMA: A POPULATION-BASED STUDY
Shabaaz M Baig, BA[1], Nehal Dhaduk, BS[1], Neel R Sangal, BA[1], Soly Baredes, MD, FACS[2], Richard Chan Woo Park, MD, FACS[1], Richard D Bavier, BA[1]; [1]Department of Otolaryngology Head and Neck Surgery, Rutgers New Jersey Medical School, Newark, New Jersey, USA, [2]Center for Skull Base and Pituitary Surgery, Neurological Institute of New Jersey, Rutgers New Jersey Medical School, Newark, New Jersey, USA

D126: TIMING OF COMPLICATIONS FOLLOWING TOTAL LARYNGECTOMY
Archana Babu, MS[1], Richard D Bavier, BA[1], Shabaaz M Baig, BA[1], Soly Baredes, MD, FACS[2], Richard Chan Woo Park, MD, FACS[1]; [1]Department of Otolaryngology Head and Neck Surgery, Rutgers New Jersey Medical School, Newark, New Jersey, USA, [2]Center for Skull Base and Pituitary Surgery, Neurological Institute of New Jersey, Rutgers New Jersey Medical School, Newark, New Jersey, USA

D127: HOME-BASED LYMPHEDEMA MANAGEMENT IS EFFECTIVE: A PILOT STUDY
Heather Starmer, MA, CCCSLP, BCSS, Christopher Holsinger, MD, Theresa Jingyun Yao, BA, Beth Beadle, MD; Stanford University

D128: OUTCOMES OF HEROIC SALVAGE SURGERY IN RECURRENT HEAD AND NECK CANCER
Adeeba F Ghias, BS[1], Meghan B Crawley, MD, MS[1], Larissa Sweeny, MD[2], Tingting Zhan, PhD[1], Joseph Curry, MD[1], Adam Luginbuhl, MD[1], Richard Goldman, MD[1], David M Cognetti, MD[1]; [1]Thomas Jefferson University Hospital, [2]Our Lady of the Lake Regional Medical Center

D129: POPULATION AWARENESS OF HEAD AND NECK CANCERS AND ITS RISK FACTORS AND PREVENTION MEASURES IN BRAZIL
Aline L Chaves[1], Vinicius C Souza[2], Diego C Morais[3], Eduardo D Morais[4], Luiz P Kowalski[5], Gustavo N Marta[6], Gilberto Castro Junior[6]; [1]DOM Oncologia, [2]Clinica AMO, [3]Centro de Oncologia de Caruaru, [4]Núcleo de Oncologia da Bahia, [5]AC Camargo Cancer Center, [6]Instituto do Cancer do Estado de Sao Paulo

D130: INDIVIDUALIZED PREDICTION OF LATE-ONSET DYSPHAGIA IN HEAD AND NECK CANCER SURVIVORS
Alana Aylward, MD[1], Jihye Park[2], Sarah Abdelaziz, MStat[1], Richard Cannon, MD[1], Luke Buchmann, MD[1], Jason Hunt, MD[1], Mia Hashibe, PhD, MPH[3], Marcus M Monroe, MD[1]; [1]University of Utah School of Medicine and Huntsman Cancer Institute, [2]University of North Carolina Chapel Hill, [3]University of Utah School of Medicine

D131: THE ROLE OF POST OPERATIVE EMESIS IN PHARYNGOCUTANEOUS FISTULA FORMATION POST LARYNGECTOMY
Margaret B Mitchell, BA[1], Jonathan Wanderer, MD[2], Young Kim, MD, PhD[3], Kyle Mannion, MD[3], James Netterville, MD[3], Sarah Rhode, MD[3], Robert Sinard, MD[3], Alexander Langerman, MD, SM[3]; [1]Vanderbilt University School of Medicine, [2]Vanderbilt University Medical Center Dept. of Anesthesiology, [3]Vanderbilt University Medical Center Dept. of Otolaryngology

D132: PREDICTORS AND DISTRIBUTION OF OCCULT NODAL DISEASE IN PATIENTS UNDERGOING SALVAGE OROPHARYNGEAL SURGERY
Molly E Heft Neal, MD, Julia Brennan, BSE, J Chad Brenner, Andrew J Rosko, Matthew E Spector; University of Michigan

D133: IS IT NECESSARY TO RECEIVE POSTOPERATIVE RADIOTHERAPY FOR PT3-4AN0M0 PATIENTS WITH HISTOLOGICALLY WELL-DIFFERENTIATED ORAL SQUAMOUS CELL CARCINOMA?
Zhien Feng, Zhengxue Han; Department of Oral and Maxillofacial-Head and Neck Oncology, Beijing Stomatological Hospital, Capital Medical University

D134: HPV STATUS IN PATIENTS WITH NASOPHARYNGEAL CARCINOMA IN THE UNITED STATES: SEER DATABASE STUDY
Michael Wotman, BA[1], Eun Jeong Oh, PhD[2], Seungjun Ahn, PhD[1], Dennis Kraus, MD[1], Peter Costantino, MD[1], Tristan Tham, MD[1]; [1]Donald and Barbara Zucker School of Medicne at Hofstra/Northwell, [2]Columbia University

D135: COMPLIANCE WITH NATIONAL COMPREHENSIVE CANCER NETWORK POST-TREATMENT SURVEILLANCE GUIDELINES IN PATIENTS WITH HEAD AND NECK CANCER
Samantha Tam, Zhannat Nurgalieva, PhD, Kristen B Pytynia, MD, MPH, Randal S Weber, MD, Carol M Lewis; University of Texas MD Anderson Cancer Center

D136: HEAD AND NECK CANCER SURVIVORSHIP FROM THE PATIENT PERSPECTIVE
Nitin A Pagedar, MD, MPH, Nicholas D Kendell, MS, Alan J Christensen, PhD, Timothy A Thomsen, MD, Michaela L Haugland, ARNP, Aaron T Seaman, PhD; University of Iowa

D137: SURVIVAL OF PATIENTS WITH CHEMOTHERAPY INSENSITIVE SOFT TISSUE SARCOMAS OF THE HEAD AND NECK: A RETROSPECTIVE COHORT NATIONAL CANCER DATABASE STUDY
Jeffrey C Rastatter, MD, Amanda Dilger, MD, David Walterhouse, MD, Tord Alden, MD, Urjeet Patel, MD; Northwestern University Feinberg School of Medicine

D138: COMPARATIVE ANALYSIS OF SWALLOWING FUNCTION IN SUPRAGLOTTIC CANCER: TRANSORAL SURGERY OR OPEN CONSERVATION SURGERY?
Geun Jeon Kim, MD, Chung soo Kim, Sang-Yeon Kim, Min-Sik Kim; Department of Otolaryngology-Head and Neck Surgery, College of Medicine, The Catholic University of Korea

D139: COMPARISON OF SURVIVAL ESTIMATES FOLLOWING RECURRENCE, PERSISTENCE OR SECOND PRIMARY MALIGNANCY (SPM) IN OROPHARYNGEAL SQUAMOUS CELL CARCINOMA (OPSCC)

POSTER LISTINGS

Ameya A Asarkar, MD[1], Jose M Flores, MD, PhD[2], Tara Moore-Medlin, BS[1], Cherie-Ann O Nathan[1]; [1]LSU Health Sciences Center, Shreveport, LA, [2]Yale University School of Medicine, New Haven, CT

D140: CORRELATION BETWEEN OBSTRUCTIVE SLEEP APNEA HYPOPNEA SYNDROME AND LARYNGOPHARYNGEAL REFLUX DISEASE/GASTROESOPHAGEAL REFLUX DISEASE
Lei Wang, MS, Gang Wang, MD, Wei Wu, MD, Hongdan Liu, RN, Bingxin Xu, RN; Department of Otorhinolaryngology Head and Neck Surgery, Chinese PLA 306th Hospital

D141: THE ROLE OF PREOPERATIVE EMBOLIZATION IN THE MANAGEMENT OF FAMILIAL AND NON-FAMILIAL PARAGANGLIOMAS OF THE HEAD AND NECK
Neeta V Karani, MD[1], Robert G Molnar, MD, MS, FACS[2], Wayne K Kinning, MD, FACS, RVT[2], Jessica L Williams, MD[1], Robin Buttar, BS[3], T Kalapparambath, MD[4], H Gayar, MD[4], M Arora, MD[4], D Wiese, MD, PhD[4], Russell Becker, DO[4], Sukamal Saha, MD, FACS, FRCS[4]; [1]Michigan State University - McLaren Flint, [2]Michigan Vascular Center, [3]University of Michigan, [4]McLaren Flint

D142: LONGITUDINAL EFFECTS OF POST-OPERATIVE RADIOTHERAPY ON FUNCTIONAL OUTCOMES IN ADVANCED ORAL SQUAMOUS CELL CARCINOMA
Ciaran Lane, MD, MSc[1], Candace Myers, MSc, SLP[2], Pascal Lambert, MSc[2], Paul Kerr, MD, FRSCS[1]; [1]University of Manitoba, [2]CancerCare Health Sciences Centre

D143: ESTABLISHMENT OF INDICATIONS AND OPERATIVE TECHNIQUES OF ROBOTIC HEAD & NECK SURGERY FOR HEAD & NECK AND THYROID TUMOR ANALYSIS OF A SINGLE SURGEONS EXPERIENCES OF OVER 1,000 CASES IN 8 YEARS
Young Min Park, Se-Heon Kim, Eun Chang Choi, Yoon Woo Koh, Da Hee Kim; Yonsei University College of Medicine

D145: TREATMENT TRENDS IN HPV+ OROPHARYNGEAL SQUAMOUS CELL CARCINOMA: A STUDY OF THE NATIONAL CANCER DATABASE
Kevin Y Zhan, MD[1], Sidharth V Puram, MD, PhD[1], Dustin A Silverman, MD[1], Amit A Agrawal, MD[1], Enver Ozer, MD[1], Matthew O Old, MD[1], Ricardo L Carrau, MD[1], James W Rocco, MD, PhD[1], Kevin Higgins, MD, MSc, FRCSC[2], Danny J Enepekides, MD, MPH, FRCSC[2], Stephen Y Kang, MD[1], Antoine Eskander, MD, ScM, FRCSC[2]; [1]Department of Otolaryngology - Head & Neck Surgery, Division of Head & Neck Oncology, The Ohio State University, James Cancer Center and Solove Research Institute, [2]Department of Otolaryngology - Head & Neck Surgery, Sunnybrook Health Sciences Centre, University of Toronto

RADIATION THERAPY

D146: TUMOR TARGET DELINEATION IN HEAD AND NECK RE-IRRADIATION CASES: A COMPARISON BETWEEN DUAL ENERGY COMPUTED TOMOGRAPHY AND MAGNETIC RESONANCE IMAGING
Sweet Ping Ng, MBBS, FRANZCR, Carlos E Cardenas, PhD, Hesham Elhalawani, MD, MSc, Courtney Pollard III, MD, PhD, Baher Elgohari, MD, MSc, Penny Fang, MD, Mohamed Meheissen, MD, Houda Bahig, MD, PhD, Mona Kamal, MD, PhD, Adam S Garden, MD, Jay P Reddy, MD, PhD, Clifton D Fuller, MD, PhD, Jack Phan, MD, PhD; MD Anderson Cancer Center

D147: PREDICTORS OF LATE LOWER CRANIAL NEUROPATHY IN LONG-TERM OROPHARYNGEAL CANCER SURVIVORS
P Aggarwal, MPH[1], J Zaveri, MPH[1], R P Goepfert, MD[1], S Y Lai, MD, PhD[1], C Fuller, MD, PhD[1], D I Rosenthal, MA, MD[1], X L Du, MS, PhD[2], M Swartz, PhD[2], L B Piller, MD, MPH[2], K Hutcheson, PhD[1]; [1]MD Anderson Cancer Center, [2]The University of Texas Health Science Center at Houston

D148: USING MACHINE LEARNING TO PREDICT DELAYS IN ADJUVANT RADIATION FOLLOWING SURGERY FOR HEAD AND NECK CANCER
Jacob New, Matthew Shew, Andrés Bur; University of Kansas Medical Center

D149: THE IMPACT OF SLP-PATIENT VISIT FREQUENCY ON WEIGHT AND FEEDING TUBE USE IMMEDIATELY FOLLOWING RADIATION THERAPY FOR HEAD AND NECK CANCER
Mathew B Vansant, MS, CCCSLP[1], Andrew McWhorter, MD[2], Melda Kunduk, PHD[1]; [1]Department of Comminication Sciences and Disorders, Louisiana State University, [2]Department of Otolaryngology-Head and Neck Surgery Louisiana State University Health Sciences Center, School of Medicine

D150: ENGAGING STAKEHOLDERS TO IDENTIFY RELEVANT OUTCOMES FOR DYSPHAGIA INTERVENTION
Margaret Fitch, PhD, MScN[1], Cameron Macdonald, PhD[2], Katherine A Hutcheson, PhD[3], Timothy M McCulloch, MD, FACS[4], Rosemary Martino, PhD[1]; [1]University of Toronto, [2]Qualitative Health Research Consultants, [3]The University of Texas MD Anderson Cancer Center, [4]University of Wisconsin School of Medicine and Public Health

D151: TREATMENT OF OSTEORADIONECROSIS OF THE HEAD AND NECK USING A MODIFIED AMERICAN PENTOCLO PROTOCOL
Abhay Sharma, MD[1], Matthew Carmichael, MD[1], Sepehr Shabani, MD[1], Jon Burton, MD[2], Matthew Mifsud, MD[1], Tapan Padhya, MD[1]; [1]University of South Florida, [2]James A Haley VA

D152: A PHASE I/II CLINICAL STUDY OF NBTXR3 ACTIVATED BY SABR IN COMBINATION WITH PD-1 INHIBITION IN PATIENTS WITH ADVANCED HNSCC OR NSCLC
James Welsh[1], Tanguy Y Seiwert[2], Christophe Le Tourneau[3], Corey C Foster[2], Yun Hu[1], Valentin Calugaru[3], Sylvie Bonvalot[3]; [1]MD Anderson Cancer Center, [2]The University of Chicago Medicine, [3]Institut Curie

D153: VOLUMETRIC TUMOR CHANGES IN HEAD AND NECK SQUAMOUS CELL CARCINOMA PATIENTS TREATED WITH SEQUENTIAL VERSUS CONCURRENT IMMUNOTHERAPY AND CHEMO-RADIATION.
Amal Javaid[1], Dwight E Heron, MD[2], Heath Skinner, MD, PhD[2], James P Ohr, DO[2], Dan P Zandberg, MD[2], Hong Wang, PhD[3], David A Clump II, MD, PhD[2]; [1]University of Pittsburgh School of Medicine, [2]University of Pittsburgh Medical Center, Department of Radiation Oncology, [3]University of Pittsburgh Biostatistics

D155: OUTCOMES OF INTENSITY MODULATED IRRADIATION FOR SINONASAL CANCERS: THE MD ANDERSON EXPERIENCE
Houda Bahig, MD, PhD, Ehab Y Hanna, MD, PhD, Adam S Garden, MD, Sweet Ping Ng, MD, PhD, Theresa P Nguyen, Steven J Frank, Gary B Gunn, David I Rosenthal, MD, Clifton D Fuller, MD, OhD, William H Morrison, MD, Renata Ferrarotto, MD, Shirley Y Surgis, MD, Diana Bell; MD Anderson Cancer Center

D156: INTENSITY MODULATED PROTON THERAPY FOR OROPHARYNGEAL SQUAMOUS CELL CANCER: THE MD ANDERSON CANCER CENTER EXPERIENCE
Houda Bahig, MD, PhD, Gary B Gunn, MD, Adam S Garden, MD,

POSTER LISTINGS

David I Rosenthal, MD, Jack Phan, MD, PhD, Clifton D Fuller, MD, PhD, Jay P Reddy, MD, PhD, Kate Hutcheson, Rong Ye, PhD, Randal S. Weber, Jeffery H Myers, Neil Gross, MD, Erich Sturgis, Charles Lu, Maura Maura Gillison, MD, Mike Hernandez, PhD, Steven J Frank, MD; MD Anderson Cancer Center

RECONSTRUCTIVE

D157: TIMING OF COMPLICATIONS FOLLOWING FREE FLAP
Richard D Bavier, BA[1], Nicole Farber, BS[1], Peter Ashman, MD[1], Soly Baredes, MD, FACS[2], Richard Chan Woo Park, MD, FACS[1]; [1]Department of Otolaryngology Head and Neck Surgery, Rutgers New Jersey Medical School, Newark, New Jersey, USA, [2]Center for Skull Base and Pituitary Surgery, Neurological Institute of New Jersey, Rutgers New Jersey Medical School, Newark, New Jersey, USA

D158: OSTEOCUTANEOUS FREE FLAP RECONSTRUCTION IN THE ELDERLY: REVIEW OF A SINGLE INSTITUTIONS OUTCOMES
Jordan A Malenke, MD, Shanik J Fernando, MD, Doug J Totten, BS, Justin R Shinn, MD, Nolan B Seim, Sarah L Rohde, MD; Vanderbilt University

D159: THE ANTEROLATERAL THIGH OSTEOCUTANEOUS (ALTO) FREE FLAP: A CLINICAL UPDATE AND LESSONS LEARNED
Ernest D Gomez, MD, MTR[1], Robert M Brody, MD[1], Thorsen W Haugen, MD[2], Neil P Sheth, MD[1], Rabie M Shanti, DMD, MD[1], Karthik Rajasekaran[1], Ara A Chalian, MD[1], Jason G Newman, MD[1], Steven B Cannady, MD[1]; [1]University of Pennsylvania, [2]Geisinger Health System

D160: PREVENTING WOUND BREAKDOWN AND PROLONGED HOSPITALIZATION IN FREE FLAP PATIENTS: WHICH FACTORS MATTER?
Marianne Abouyared, MD, Theodore Gobillot, BS, Ryan Mitchell, MD, PhD, Brittany Barber, MD, Jeffrey Houlton, MD, Neal Futran, MD, DMD; University of Washington

D161: INTERPOSITION VEIN GRAFTING IN FREE TISSUE TRANSFER IN THE HEAD AND NECK
Nolan Seim, MD[1], Matthew Old, MD[1], Daniel Petrisor, MD, DMD[2], William Thomas, MD[2], Akash Naik, MD[1], Alia J Mowery, BS[2], Stephen Kang, MD[1], Ryan Li, MD[2], Mark K Wax, MD[2]; [1]Ohio State University, [2]Oregon Health and Science University

D162: ULNAR ARTERY PERFORATOR FREE FLAP VERSUS RADIAL FOREARM FREE FLAP IN HEAD AND NECK RECONSTRUCTION
Tanner Fullmer, MD[1], Suhael Momin, MD[2], Sina Koochakzadeh, BS[3], Elizabeth Nicolli, MD[4], Joshua Horning[3], Terry Day[3], Andrew T Huang[1]; [1]Department of Otolaryngology Head and Neck Surgery, Baylor College of Medicine, Houston, TX, [2]Department of Otolaryngology Head and Neck Surgery, Henry Ford Health System, Detroit, MI, [3]Department of Otolaryngology Head and Neck Surgery, Medical University of South Carolina, Charleston, SC, [4]Department of Otolaryngology Head and Neck Surgery, The University of Miami, Miami, FL

D163: THREE DIMENSIONAL MODELING OF THE SCAPULAR TIP FOR ANTEROLATERAL AND LATERAL MANDIBULAR DEFECTS
Emily Marchiano, MD[1], Jayne R Stevens, MD[2], Eric Liao, MD[1], Andrew J Rosko, MD[1], Allison Powell, BS[1], Chaz L Stucken, MD[1], Matthew E Spector, MD[1]; [1]University of Michigan, [2]Tripler Army Medical Center

D164: ROLE OF CONTINUOUS LOCAL INFUSION OF ROPIVACAINE FOR POST-OPERATIVE PAIN MANAGEMENT IN PATIENTS RECEIVING OSSEOCUTANEOUS FREE FLAPS: A RANDOMIZED CONTROLLED TRIAL
Scott Roof, MD, Rocco Ferrandino, MD, Caroline Eden, MD, Yury Khelemsky, MD, Joshua Rosenberg, Marita Teng, Eric Genden, Samuel DeMaria Jr, Brett Miles; Mount Sinai

D165: ASSOCIATION OF POST-OPERATIVE THROMBOCYTOSIS AND POST-OPERATIVE COMPLICATIONS IN HEAD AND NECK CANCER PATIENTS UNDERGOING FREE TISSUE RECONSTRUCTION
Benjamin Russell, BS[1], Jad Ramadan, MS[2], Rusha Patel, MD[2]; [1]Marshall University, [2]West Virginia University

D166: THE PROFUNDA ARTERY PERFORATOR FLAP FOR HEAD AND NECK RECONSTRUCTION: CADAVERIC ANATOMIC DESCRIPTION AND PERFORATOR PATTERNS
Michael Roskies, MD, MSc, FRCSC[1], Andrea L Hanick, MD[2], Sara W Liu, MD[2], Jamie A Ku, MD[2]; [1]University of Toronto, [2]Cleveland Clinic

D167: PERIOPERATIVE OUTCOMES FOLLOWING FREE FIBULA FLAP RECONSTRUCTION WITH OR WITHOUT CAD/CAM-ASSISTED VIRTUAL SURGICAL PLANNING FOR COMPLEX MANDIBULECTOMY DEFECTS: A RETROSPECTIVE ANALYSIS OF 300 CASES
Jamie A Ku, MD[1], Alexander Mericli, MD[2], Noopur Gangopadhyay, MD[3], Jun Liu, PhD[2], Patrick Garvey, MD, FACS[2]; [1]Cleveland Clinic, [2]MD Anderson Cancer Center, [3]Northwestern University Feinberg School of Medicine

D168: ASSESSING FREE FLAP RECONSTRUCTION ACCURACY OF THE MIDFACE AND ORBIT USING 3D MODELING SOFTWARE
Bovey Zhu, MD, Mary Han, BA, Chase M Heaton, MD, Andrea M Park, MD, Rahul Seth, MD, Philip D Knott, MD; University of California, San Francisco

D169: A COMPARISON OF FUNCTIONAL OUTCOMES FROM THE RADIAL FOREARM FREE FLAP AND THE ANTEROLATERAL THIGH FREE FLAP IN THE ORAL AND OROPHARYNGEAL CANCER.
Yun-Jin Kang, MD, Sang-Yeon Kim, Young-Hoon Joo, Min-Sik Kim; College of Medicine, The Catholic University of Korea

D170: INCIDENCE OF PEDICLE OSSIFICATION IN OSSEOUS FREE FLAP RECONSTRUCTION IN THE HEAD AND NECK
Joe-Lawrence M Bigcas[1], Carey B Wood, MD[2], Sarah L Rohde[2], Kyle Mannion[2]; [1]University of Nevada - Las Vegas, [2]Vanderbilt University Medical Center

D171: VARIATIONS IN POST-OPERATIVE PAIN AND NARCOTIC USE AFTER FREE FLAP RECONSTRUCTION SURGERY
Brian H Cameron[1], Bhavishya S Clark, MD[2], Mark Swanson, MD[2], Niels Kokot, MD[2], Michael Kim, DO[3]; [1]Keck School of Medicine of USC, [2]USC Tina and Rick Caruso Department of Otolaryngology - Head and Neck Surgery, [3]Keck School of Medicine of USC Department of Anesthesiology

D172: THE NUTRITION RELATED INDEX IS PREDICTIVE OF PERIOPERATIVE MORBIDITY FOLLOWING HEAD & NECK MICROVASCULAR SURGERY
Harman Parhar, MD, MPH, Scott Durham, MD, Donald W Anderson, MD, Barret Rush, MD, MPH, Eitan Prisman, MD; University of British Columbia, Vancouver, Canada

D173: THE ROLE OF TRACHEOSTOMY IN MANDIBULECTOMY WITH MICROVASCULAR RECONSTRUCTION

POSTER LISTINGS

Jenny F Ma, MD, Michael C Topf, MD, Swar Vimawala, BS, Tony Richa, MD, Richard Goldman, MD, Adam Luginbuhl, MD, Howard Krein, MD, Ryan Heffelfinger, MD, Joseph M Curry, MD; Thomas Jefferson University

D174: OCCLUSION AND FUNCTIONAL OUTCOMES AFTER COMPLETE TEMPOROMANDIBULAR JOINT RESECTION AND SOFT TISSUE RECONSTRUCTION
Jake J Lee, MD, Daniel P Lander, BS, Ryan S Jackson, MD, Patrik Pipkorn, MD; Washington University School of Medicine in St. Louis

D175: INNOVATIVE INSERTION OF THE PALMARIS MAJOR TENDON AFTER LOWER LIP RECONSTRUCTION: THE SUNNYBROOK APPROACH
Axel Sahovaler, MD, Kevin Higgins, MD, Antoine Eskander, MD, Msc, Danny Enepekides, MD; Department of Otolaryngology-Head and Neck Surgery and Surgical Oncology, Sunnybrook Odette Cancer Centre, University of Toronto, Toronto, Ontario, Canada.

D176: THE EFFECT OF BOLSTER DURATION ON THE RATES OF SPLIT THICKNESS SKIN GRAFT TAKE IN FIBULA FREE FLAP DONOR SITES
Abel P David, MD[1], Chase Heaton, MD[1], Andrea Park, MD[1], Rahul Seth, MD[1], P Daniel Knott, MD[1], Jeffrey D Markey, MD[2]; [1]Department of Otolaryngology-Head and Neck Surgery, University of California, San Francisco, [2]Department of Otolaryngology-Head and Neck Surgery, New York University Langone Health

D177: THE ANTEROLATERAL THIGH FASCIA LATA RESCUE FLAP A NEW WEAPON IN THE BATTLE AGAINST OSTEORADIONECROSIS.
Joseph B Meleca, MD, Rhorie P Kerr, MD, Michael A Fritz, MD; The Cleveland Clinic

D178: MACHINE LEARNING ANALYSIS FOR IDENTIFYING FACTORS IMPORTANT IN PREDICTING HEAD AND NECK MICROVASCULAR FREE FLAP RECONSTRUCTION OUTCOMES
Eric Formeister, MD, MS[1], Rachel Baum, PhD[2], Karolina Plonowska, BS[1], Mary Han, BS[1], Daniel Knott, MD[1], Rahul Seth, MD[1], Patrick Ha, MD[1], William Ryan, MD[1], Ivan El-Sayed, MD[1], Jonathan George, MD, MPH[1], Chase Heaton, MD[1]; [1]University of California - San Francisco, [2]University of North Carolina Gillings School of Public Health

D179: TEMPORALIS TENDON TRANSFER/LENGTHENING TEMPORALIS MYOPLASTY FOR REANIMATION AFTER HEAD & NECK ONCOLOGIC SURGERY
Adrian House, MD, Rahul Seth, MD, P. Daniel Knott, MD; University of California, San Francisco

D180: IS FRAILTY ASSOCIATED WITH WORSE OUTCOMES OR INCREASED COMPLICATION RATES IN FREE FLAP RECONSTRUCTION FOR HEAD AND NECK CANCER?
Jordan M Sukys, MD[1], Elliot Morse, BS[2], Saral Mehra, MD, MBA, FACS[1]; [1]Department of Surgery, Section of Otolaryngology, Yale School of Medicine, [2]Yale School of Medicine

D181: FISTULA RATE AFTER LARYNGECTOMY: IMPACT OF PREVIOUS TREATMENT, CHOICE OF RECONSTRUCTION, AND TYPE OF PHARYNGEAL CLOSURE
Dylan F Roden, Swar Vimawala, Tony Richa, Michael Topf, Ryan Heffelfinger, Howard Krien, Adam Luginbuhl, Richard Goldman, David Cognetti, Joe Curry; Thomas Jefferson University

D182: PROPELLER FLAPS IN DONOR SITE CLOSURES IN OSTEOCUTANEOUS FIBULA FREE TISSUE TRANSFERS: AN INSTITUTIONS EXPERIENCE AND USE OF NOVEL MUSCULOCUTANEOUS PERFORATORS
Patrick F Morgan, MD[1], Joshua Hornig, MD[1], Suhael R Momin, MD[2], Robert M Brody, MD[3], William Albergotti, MD[4], Evan Graboyes, MD[1]; [1]Medical University of South Carolina, [2]Henry Ford Health System, [3]University of Pennsylvania, [4]Department of Otolaryngology - Head and Neck Surgery, Medical College of Georgia at Augusta University

D183: EVALUATION OF HARDWARE COMPLICATIONS FOLLOWING OROMANDIBULAR RECONSTRUCTION USING THREE-DIMENSIONAL ANALYSIS.
Joel C Davies, MD, Harley Chan, PhD, Christopher Yao, MD, FRCSC, Hedyeh Ziai, MD, John de Almeida, MD, MSc, FRCSC, John C Irish, MD, MSc, FRCSC; University of Toronto

D184: SURGICAL SITE AND DELAYED RETURN TO ORAL INTAKE FOLLOWING FREE FLAP RECONSTRUCTION
Douglas J Totten, BA, Shanik J Fernando, MD, Jordan A Malenke, MD, Justin R Shinn, MD, C Burton Wood, MD, Nolan Seim, MD, Sarah L Rohde, MD; Vanderbilt University Medical Center

D185: USE OF A PROPELLER FLAP FOR CLOSURE OF A DISTAL ANTEROLATERAL THIGH FREE FLAP DONOR SITE
Erin Wynings, MD, Kelsey Mothersole, MD, Eli Gordin, MD; University of Texas Southwestern

D186: DONOR-SITE MORBIDITY FOLLOWING FIBULA FREE FLAP RECONSTRUCTION
Theodore A Gobillot, BS, Harrison Cash, MD, Alec W Gibson, BS, Marianne Abouyared, MD, Ryan Mitchell, MD, PhD, Neal Futran, MD, DMD, Brittany Barber, MD, MSc, FRCSC, Jeffrey J Houlton, MD; University of Washington

D187: EVALUATION OF VASOPRESSOR USE FOR HEMODYNAMIC MANAGEMENT OF HEAD AND NECK FREE FLAP PATIENTS: A SURVEY OF ANESTHESIOLOGISTS
Benjamin Bitner, BS, Michael Berger, MD, Yarah Haidar, MD, Govind Rajan, MD, Tjoson Tjoa, MD; Univeristy of California Irvine

D188: ANALYSIS OF TIME TO ADJUVANT THERAPY AFTER FREE TISSUE TRANSFER LOSS IN HEAD AND NECK CANCER
David S Kim, Fellow, Mark K Wax, Professor, Ryan J Li, Assistant Professor; Oregon Health and Science University

D189: CHANGING TO A MORE RESTRICTIVE TRANSFUSION THRESHOLD DOES NOT AFFECT FLAP OUTCOMES IN FREE TISSUE TRANSFER TO THE HEAD AND NECK
Samuel Altonji[1], Jessica Grayson, MD[2], Joshua Richman, MD, PhD[1], David Davis, DDS, MD[1], Philip Rosen, MD[1], Lindsay Moore, MD[1], Eben Rosenthal, MD[3], Benjamin Greene, MD[1], Brian Hughley, MD[1], Anthony Morlandt, DDS, MD[1], William Carroll, MD[1]; [1]University of Alabama at Birmingham, [2]St. Vincent's Hospital, Sydney, [3]Stanford University

SALIVARY

D190: INCIDENCE OF WARTHIN TUMOR IN A VETERAN POPULATION: A SHIFTING PARADIGM
Adnan S Hussaini[1], Edina Paal, MD[2], Sonya Malekzadeh, MD[3], Jessica H Maxwell[3]; [1]Medstar Georgetown University Hospital - Department of Otolaryngology - Head & Neck Surgery, [2]The George Washington University, Department of

Pathology, [3]Washington DC Veterans Affairs Medical Center, Department of Otolaryngology - Head & Neck Surgery

D191: RESPONSE TO LAROTRECTINIB AS PRIMARY SYSTEMIC THERAPY FOR UNRESECTABLE MAMMARY ANALOG SECRETORY CARCINOMA OF THE PAROTID GLAND
Haley N Kemp, MPAS, PAC[1], Ly Nguyen[1], Sandra Montez[1], Diana Bell[1], Filip Janku[1], Maura L Gillison[1], Ehab Y Hanna[1], Nora Ku[2], David Hong[1], Xiuning Le[1]; [1]MD Anderson Cancer Center, [2]Loxo Oncology, Inc

D192: A NOVEL PAROTID AND FACIAL NERVE SURGICAL SIMULATOR: DESIGN AND INITIAL VALIDATION.
Fanny Gabrysz-Forget, MD, Robert W Dolan, MD, Bharat B. Yarlagadda, MD; Lahey Hospital & Medical Center

D193: LATE LOCOREGIONAL AND DISTANT METASTASES IN A LARGE LONG-TERM ADENOID CYSTIC CARCINOMA COHORT
Peter Lancione, BA[1], Bhavna Kumar, MS[2], Amit Agrawal, MD[2], Ricardo Carrau, MD[2], Stephen Kang, MD[2], Enver Ozer, MD[2], James Rocco, MD, PhD[2], Matthew Old, MD[2]; [1]The Ohio State University College of Medicine, [2]Department of Otolaryngology, The Ohio State University Wexner Medical Center

D194: PREDICTORS OF NODAL METASTASIS IN MUCOEPIDERMOID CARCINOMA OF THE UPPER AERODIGESTIVE TRACT
Viran J Ranasinghe, MD[1], Linda C Magana, PhD[2], Adam C Kaufman, MD, PhD[1], Robert M Brody, MD[1]; [1]University of Pennsylvania, [2]Thomas Jefferson University

D195: LIPOFECTION-MEDIATED IN VIVO TRANSFECTION OF AQUAPORIN-5 IN RAT SALIVARY GLANDS: A POTENTIAL TREATMENT FOR RADIATION INDUCED XEROSTOMIA
Max Hennessy, MD, Victor Ruiz-Velasco, PhD, Sanjib Adhikary, MD, MBBS, Neerav Goyal, MD, MPH; Penn State

D196: REVIEW OF TREATMENT MODALITIES AND OUTCOMES OF PATIENTS WITH BASAL CELL ADENOCARCINOMA
Claudia N Gutierrez, MS[1], Kyriakos Chatzopoulos, MD[2], Joaquin J Garcia, MD[2], Jeffrey R Janus, MD[3]; [1]Mayo Clinic School of Medicine, [2]Department of Laboratory Medicine and Pathology, Mayo Clinic, [3]Department of Otorhinolaryngology, Mayo Clinic

D197: POSITIVE SURGICAL MARGINS IN SUBMANDIBULAR MALIGNANCIES: FACILITY AND PRACTICE VARIATIONS
Liliya Benchetrit, BA[1], Elliot Morse, BS[1], Saral Mehra, MD, MBA[2]; [1]Department of Surgery, Division of Otolaryngology, Yale University School of Medicine, New Haven, Connecticut, [2]Department of Surgery, Division of Otolaryngology, Yale University School of Medicine, New Haven, Connecticut; Yale Cancer Center, New Haven, Connecticut

D198: TRANSORAL SUBMANDIBULAR GLAND EXCISION: AN UNDERUTILIZED TECHNIQUE
Panav Jha, BA; Saint Mathews University School of Medicine

D199: SOCIODEMOGRAPHIC INCIDENCE TRENDS IN MUCOEPIDERMOID CARCINOMA IN NORTH AMERICA, 1995-2015
Zachary Farhood, MD, Matthew Simpson, Nosayaba Osazuwa-Peters; Saint Louis University

D200: UNDERSTANDING BASAL CELL ADENOCARCINOMA OF THE HEAD AND NECK: A POPULATION-BASED STUDY
Lena Sheorey, BS[1], Neel R Sangal, BA[1], Rohan Sawhney, BA[1], Soly Baredes, MD, FACS[2], Richard Chan Woo Park, MD, FACS[1]; [1]Department of Otolaryngology Head and Neck Surgery, Rutgers New Jersey Medical School, Newark, New Jersey, USA, [2]Center for Skull Base and Pituitary Surgery, Neurological Institute of New Jersey, Rutgers New Jersey Medical School, Newark, New Jersey, USA

D201: CARCINOMA EX PLEOMORPHIC ADENOMA: A HIGH-GRADE TUMOR WITH GOOD SURVIVAL
Avigeet Gupta, BS, Sina Koochakzadeh, BS, David M Neskey, MD, MSCR, Shaun A Nguyen, MD, MA, Eric J Lentsch, MD; Medical University of South Carolina

D202: THE USE OF COMPRESSION DRESSING AFTER PAROTIDECTOMY IMPROVES THE RATE OF SIALOCELE/SALIVARY FISTULA FORMATION
Anas Eid, MD, Sarah E Langsdon, BS, Courtney B Shires, MD; University of Tennessee

D203: SENSITIVITY OF FINE NEEDLE ASPIRATION AND IMAGING MODALITIES IN THE DIAGNOSIS OF LOW GRADE MUCOEPIDERMOID CARCINOMA OF THE PAROTID GLAND
Samuel L Garrett, Kiley Trott, MD, Christopher Sebastiano, MD, Michael J Wolf, MD, Neeta K Rao, MD, Joseph M Curry, MD, David M Cognetti, MD, Adam J Luginbuhl, MD; Thomas Jefferson University

D204: INHIBITION OF WNT/BETA-CATENIN PATHWAY AS A THERAPEUTIC TARGET IN ADENOID CYSTIC CARCINOMA
Hyun-su Kim[1], Joseph O Humtsoe[1], Brandon Leonard[1], Bhumsuk Keam[2], Luigi Marchionni[3], Elana J Fertig[3], Patrick Ha[1]; [1]Department of Otolaryngology, University of California San Francisco, San Francisco, CA, [2]Department of Medical Oncology, Seoul National University, Seoul, Korea, [3]Department of Biostatistics and Bioinformatics, Johns Hopkins University, Baltimore, MD

D205: HMG2 AND PLAG1 PROTEIN EXPRESSION IN PLEOMORPHIC ADENOMA TUMORIGENESIS AND IN THE PROGRESSION TO CARCINOMA EX PLEOMORPHIC ADENOMA
Louyse V Carvalho[1], João F Scarini[2], Reydson Alcides L Souza[2], Erika S Egal[1], Antonio S Martins[1], André Casarim[1], Agrício N Crespo[1], Oslei P Almeida[1], Albina Altemani[1], Fernanda V Mariano[1], Luiz P Kowalski[3]; [1]School of Medical Sciences - UNICAMP, [2]Piracicaba Dental School - UNICAMP, [3]AC Camargo Cancer Center

D206: MANAGEMENT OF LOW RISK SALIVARY GLAND CARCINOMAS WITH SURGERY ALONE
Sepehr Shabani, MD[1], Abhay Varun Sharma, MD[1], Matthew Carmichael, MD[1], Matthew Mifsud, MD[1], Tapan Padhya, MD[2]; [1]University of South Florida-Morsani College of Medicine, [2]H. Lee Moffitt Cancer Center & Research Institute

D207: SALIVARY CLEAR CELL CARCINOMA CLINICOPATHOLOGIC CHARACTERISTICS AND OUTCOMES: A POPULATION-BASED ANALYSIS
Daniel Sharbel, MD, Aykut Unsal, DO, William G Albergotti, MD, James K Byrd, MD; Augusta University Department of Otolaryngology-Head and Neck Surgery

D208: INTERMEDIATE-GRADE CARCINOMA OF THE PAROTID: A NATIONAL CANCER DATABASE STUDY
Lauren M North, MD[1], Michael Stadler, MD[1], Becky Massey, MD[1], Bruce Campbell, MD[1], Monica Shukla, MD[1], Musaddiq Awan, MD[1], Christopher J Schultz, MD[1], Stuart Wong, MD[1], Evan Graboyes, MD[2], Patrick Pipkorn, MD[3], Joseph Zenga, MD[1]; [1]Medical College of Wisconsin, [2]Medical University of South Carolina, [3]Washington

POSTER LISTINGS

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D209: OUTCOMES AND RISK FACTORS OF DISEASE PROGRESSION IN ADENOID CYSTIC CARCINOMA OF THE HEAD AND NECK: THE UW/SCCA EXPERIENCE
Hannan Qureshi, MD, Jeffrey J Houlton, MD, Keith D Eaton, MD, PhD, Brittany R Barber, MD, MSc, Neal D Futran, MD, DMD, Cristina P Rodriguez, MD; University of Washington

D210: CHARISMA OF PD-L1 EXPRESSION: IS IT RELEVANT IN SALIVARY DUCT CARCINOMAS?
Diana Bell, MD, Ameer Hamza, MD, Shirley S Su, MD, Dianna Roberts, PhD, Randal S Weber, MD, Renata Ferrarotto, MD; MDACC

D211: INTRAOPERATIVE TUMOR SPILLAGE INCREASES THE RISK OF EARLY RECURRENCE IN ACINIC CELL CARCINOMA OF THE PAROTID GLAND
Pranjal B Gupta, BE, Rebecca J Hammon, MD, Lisa Rooper, MD, David W Eisele, MD; Johns Hopkins

SKIN

D212: RISK FACTORS FOR NODAL METASTASIS IN CUTANEOUS SQUAMOUS CELL CARCINOMA OF THE HEAD AND NECK
Jessica Yesensky, MD[1], Michael Kinzinger, MD[1], Brianna Harris, MD[2], Arnaud Bewley, MD[1]; [1]UC Davis, [2]University of Pennsylvania

D213: THE EFFECT OF IMMUNOSUPPRESSION SECONDARY TO AUTOIMMUNE DISEASE ON HEAD & NECK CUTANEOUS SQUAMOUS CELL CARCINOMA
Zachary Pflum, MD[1], Alhasan Elghouche, MD[1], Cecilia Schmalbach, MD, MSc, FACS[2]; [1]Indiana University, [2]Temple University

D214: MANAGEMENT OF ACUTE RADIATION-INDUCED SKIN DERMATITIS WITH CAMWELL HERB-TO-SOOTHE CREAM IN HEAD AND NECK CANCER PATIENTS RECEIVING RADIOTHERAPY A SINGLE INSTITUTION PILOT OBSERVATIONAL STUDY.
E Cecil, MSN, CRNP, Z Cheng, MD, MPH, P Han, PhD, B R Page, MD, A P Kiess, MD, PhD, H Quon, MD; The Johns Hopkins University

D215: CLINICALLY NODE-NEGATIVE HEAD AND NECK MUCOSAL MELANOMA: AN ANALYSIS OF CURRENT TREATMENT GUIDELINES & OUTCOMES
Sina J Torabi, BA, Liliya Benchetrit, BA, Todd Spock, MD, Shayan Cheraghlou, BA, Benjamin L Judson, MD; Yale School of Medicine, Department of Surgery (Section of Otolaryngology)

SKULL BASE

D216: POSITIVE SURGICAL MARGINS IN SINONASAL SQUAMOUS CELL CARCINOMA: SURVIVAL, PREDICTORS, AND THE EFFICACY OF AN ENDOSCOPIC APPROACH
Sina J Torabi, BA, Todd Spock, MD, Bruno Cardoso, MD, Janet Chao, MD, Elliot Morse, BS, R Peter Manes, MD, Benjamin L Judson, MD; Yale School of Medicine, Department of Surgery (Section of Otolaryngology)

D217: COMPARISON OF OPEN VERSUS ENDOSCOPIC SURGICAL TREATMENT OF SINONASAL MELANOMA: A PROPENSITY SCORE MATCHED NCDB ANALYSIS
Kayva L Crawford[1], Farhoud Faraji[1], Aria Jafari[1], Nyall R London[2], Ryan K Orosco[1], Joseph A Califano[1], Adam S DeConde[1]; [1]University of California San Diego, [2]Ohio State University Wexner Medical Center

D218: A MULTICENTER TRIAL IN THE DETECTION OF LOCALLY RECURRENT NASOPHARYNGEAL CARCINOMA WITH EPSTEIN BARR VIRAL DNA
Jason Chan[1], Ronald Lai[1], Allen Chan[1], Jacky Lam[1], Joseph Chung[2], Raymond Tsang[2]; [1]The Chinese University of Hong Kong, [2]The University of Hong Kong

D219: PREOPERATIVE DIRECT PUNCTURE EMBOLIZATION OF SINONASAL TUMORS: AN EVIDENCE-BASED APPROACH
Margaret I Engelhardt, MD, Ramachandra Tummala, MD, Emiro Caicedo-Granados, MD; University of Minnesota

D220: ENDOSCOPIC VERSUS OPEN APPROACHES IN RESECTION OF ESTHESIONEUROBLASTOMA, A NATIONAL CANCER DATABASE ANALYSIS.
Sarek Shen, BS[1], Kayva Crawford, MD[2], Aria Jafari, MD[2], Adam S DeConde, MD[2]; [1]University of California San Diego, School of Medicine, [2]University of California San Diego, Department of Surgery, Division of Otolaryngology-Head & Neck Surgery

D221: LONG TERM OUTCOMES WITH FUNCTION-SPARING CERVICAL SCHWANNOMA ENUCLEATION A 30 YEAR EXPERIENCE
Nolan B Seim, MD, James Netterville, MD; Vanderbilt University Medical Center

D222: PATIENT OUTCOMES AFTER REIRRADIATION OF SMALL SKULL BASE TUMORS USING STEREOTACTIC BODY RADIOTHERAPY (SBRT), INTENSITY MODULATED RADIOTHERAPY (IMRT) OR PROTON THERAPY (PRT)
Sweet Ping Ng, MBBS, FRANZCR, He Wang, PhD, Courtney Pollard III, MD, PhD, Theresa Nguyen, MS, Houda Bahig, MD, PhD, Clifton D Fuller, MD, PhD, G Brandon Gunn, MD, PhD, Adam S Garden, MD, Jay P Reddy, MD, PhD, William H Morrison, MD, Shalin Shah, MD, David I Rosenthal, MD, Steven J Frank, MD, Nandita Guha-Thakurta, MD, Renata Ferrarotto, MD, Ehab Hanna, MD, Shirley Su, MBBS, FRACS, Jack Phan, MD, PhD; MD Anderson Cancer Center

D223: MORBIDITY AND MORTALITY OF ENDOSCOPIC SKULL BASE SURGERY
Andrew B Baker, MD, Jess Mace, MPH, Kara Detwiller, MD, Timothy L Smith, MD, Mathew Geltzeiler, MD; Oregon Health and Science University

SYSTEMIC THERAPY/ IMMUNOTHERAPY

D224: ACTIVATION OF STAT1 INDUCES INTERFERON-RELATED GENES AND MEDIATES CISPLATIN RESISTANCE IN HEAD AND NECK CANCER CELLS
Hui-Ching Chuang, MDPh, D; Kaohsiung Chang Gung Memorial Hospital

D225: EXPRESSION PATTERNS AND PROGNOSTIC VALUE OF PD-L1 IN HEAD AND NECK SQUAMOUS CELL CARCINOMA
Michael A Blasco, MD, Yue Xi, PhD, George H Yoo, MD, Ho-Sheng Lin, MD, Andrew M Fribley, PhD; Wayne State University

D226: LOW SKELETAL MUSCLE MASS PREDICTS THE POOR

POSTER LISTINGS

TREATMENT OUTCOME IN PATIENTS WITH HEAD AND NECK SQUAMOUS CELL CARCINOMA RECEIVING CONCURRENT CHEMORADIOTHERAPY
Ryusuke Shodo, MD, PhD, Hiroshi Matsuyama, MD, PhD, Yushi Ueki, MD, Ryuichi Okabe, MD, Keisuke Yamazaki, MD, PhD, Kohei Honda, MD, PhD, Arata Horii, MD, PhD; Department of Otolaryngology Head and Neck Surgery, Niigata University Graduate School of Medical and Dental Sciences

D227: MACROPHAGE POLARIZATION IN METASTATIC AND ADJACENT NEGATIVE LYMPH NODES IN HEAD AND NECK SQUAMOUS CELL CARCINOMA
Swar Vimawala, BS[1], Michael C Topf, MD[1], Madalina Tuluc, MD[2], Stacey Mardekian, MD[2], David M Cognetti, MD[1], Joseph M Curry, MD[1], Ulrich Rodeck, MD, PhD[3], Adam Luginbuhl, MD[1], Larry Harshyne, PhD[4]; [1]Department of Otolaryngology Head and Neck Surgery, Thomas Jefferson University, Philadelphia, Pennsylvania, USA, [2]Department of Pathology, Anatomy, and Cell Biology, Thomas Jefferson University, Philadelphia, Pennsylvania, USA, [3]Department of Dermatology and Cutaneous Biology, Thomas Jefferson University, Philadelphia, Pennsylvania, USA, [4]Department of Cancer Biology, Sidney Kimmel Medical College at Thomas Jefferson University, Philadelphia, Pennsylvania, USA

D228: SEVERE WOUND COMPLICATIONS ASSOCIATED WITH ROBUST TREATMENT RESPONSE DURING LEVATINIB THERAPY FOR ADVANCED THYROID CANCER
Tyler S Weaver, MD, Peter E Andersen, MD, Matthew H Taylor, MD, Maisie L Shindo, MD, Dana Madison, MD, PhD, Olga Shenashova, MD, PhD, Ryan J Li, MD; Oregon Health & Science University

D229: THE CHICK EMBRYO CHORIOALLANTOIC MEMBRANE (CAM): A PLATFORM FOR ASSESSING THE IN VIVO EFFICACY OF CHIMERIC ANTIGEN RECEPTOR (CAR) T CELL THERAPY IN HEAD AND NECK CANCER
Emilie A Warren[1], Kershena S Liao[2], Hsuan-Chen Liu[1], Caroline E Porter[1], Masataka Suzuki[1], Andrew G Sikora, MD[1]; [1]Baylor College of Medicine, [2]The University of Texas Southwestern Medical Center

D230: WEE1 INHIBITOR AZD1775 ENHANCES BLOCKADE OF PD-1 IN HNSCC CELLS EXPRESSING HPV16 E6/E7 ONCOPROTEINS
Hideaki Takahashi, MD, PhD, Antje Lindemann, PhD, Ameeta A Patel, Ismail M Meraz, PhD, Mourad Majidi, PhD, Abdullah A Osman, PhD, Jeffrey N Myers, MD, PhD; The University of Texas MD Anderson Cancer Center

D231: REAL-WORLD TREATMENT OUTCOMES IN THE ELDERLY JAPANESE PATIENTS WITH HEAD AND NECK CANCER (HNC): THE DIFFERENCE BETWEEN STANDARD AND NON-STANDARD THERAPIES
Hidetaka Ikemiyagi, Goshi Nishimura, Daisuke Sano, Kenichiro Yabuki, Yasuhiro Arai, Yoshihiro Chiba, Teruhiko Tanabe, Daiki Morishita, Yohei Hiiragi, Natsumi Takao, Yoshihiro Aizawa, Yusuke Nojima, Hiromitsu Hatakeyama, Associate Professor, Nobuhiko Oridate, Professor; Department of Otorhinolaryngology, Head and Neck Surgery, School of Medicine, Yokohama City University, Yokohama, Japan.

D232: CHARACTERIZATION OF THE TUMOR IMMUNE MICROENVIRONMENT DURING HEAD AND NECK SQUAMOUS CELL CARCINOMA PROGRESSION
Subin Surendran, MS, PhD, Usama Aboelkheir, MD, William J Magner, MS, PhD, Wesley L Hicks Jr, MD, DDS, Amritha Suresh, MS, PhD, Moni A Kuriakose, MD; Roswell Park Cancer Institute

D233: EPITHELIAL-MESENCHYMAL TRANSITION GENE SIGNATURE PREDICT THE PROGNOSIS AND THE EFFECT OF IMMUNOTHERAPY IN HEAD AND NECK SQUAMOUS CELL CARCINOMA
Ah Ra Jung, MD, Soon Yuhl Nam, MD; Asan medical ceneter

D234: INDUCTION CHEMOTHERAPY IN OROPHARYNGEAL CARCINOMA
Frank Mott, MD, FACP, Ruth Sacks, MD, Maura Gillison, MD, PhD, Faye Johnson, MD, PhD, Samantha Tam, MD, Kate Hutcheson, PhD, Susan Varghese, NP, Natalie Gallagher, NP, MSN, RN, OCN, CWOCN, Jhankruti Zaveri, MPH, Marvi Bana, Jeremy Martinez; University of Texas MD Anderson Cancer Center

VALUE/QUALITY

D235: IS NECESSARY CARE UNDER UTILIZED IN HEAD AND NECK CANCER SURVIVORS?
Geoffrey C Casazza, MD[1], Hilary C McCrary, MD[1], Sarah Abdelaziz[2], Mia Hashibe, PhD[1], Richard B Cannon, MD[1], Luke O Buchmann, MD[1], Jason P Hunt, MD[1], Marcus M Monroe, MD[1]; [1]University of Utah, [2]Huntsman Cancer Institute

D236: VOICE AND SWALLOW OUTCOMES AFTER THYROIDECTOMY USING QUALIFIED OUTCOME MEASURES AND VIDEOSTROBOSCOPY
Vaninder K Dhillon, MD; Johns Hopkins University

D237: HEALTH INFORMATION TECHNOLOGY USE IN HEAD AND NECK CANCER PATIENTS: A TERTIARY CARE CENTER EXPERIENCE
Amit Bhojwani, DO, MBS, MSHM, Andres B Bur, MD, Hannah Kavookjian, MD, Kevin Sykes, PhD, MPH; University of Kansas Medical Center

D238: USE OF AN ENHANCED RECOVERY AFTER SURGERY (ERAS) PROTOCOL TO DECREASE POSTOPERATIVE OPIATE USE IN HEAD AND NECK SURGERY PATIENTS UNDERGOING FREE TISSUE TRANSFER
Alan D Workman, MD, MTR[1], Anahita Nourmahnad[2], Donald J Annino, MD, DMD[3], Linda S Aglio, MD[3], Laura A Goguen, MD[3], Ravindra Uppaluri, MD, PhD[3], Jason I Kass, MD[3]; [1]Harvard Combined Program in Otolaryngology, [2]Harvard Medical School, [3]Dana Farber Cancer Institute; Brigham and Women's Hospital

D239: LOW BODY MASS INDEX IS ASSOCIATED WITH DECREASED NODAL YIELD FROM NECK DISSECTION SPECIMENS
Hamza Bhalli, Larry Myers, MD, John Truelson, MD, Andrew Day, MD, Brittny Tillman, MD, Justin Bishop, MD, Lenka Stankova, MD, Eli Gordin, MD, Baran D Sumer, MD; UT Southwestern Medical Center

D240: THE PERCEIVED COST OF HEAD AND NECK SURGERY AMONG FUTURE HEALTH CARE ADMINISTRATORS
Andres M Bur, MD, Jennifer A Villwock, MD; University of Kansas

D241: PREVALENCE OF INSOMNIA AND ITS ASSOCIATION WITH PSYCHOLOGICAL SYMPTOM BURDEN AND QUALITY OF LIFE IN HEAD AND NECK CANCER SURVIVORS
Marci L Nilsen, PhD, RN, CHPN[1], Ryan J Soose, MD[2], Christine Harrison, BS[3], Lingyun Lyu, MS[4], Jonas T Johnson, MD[2]; [1]University of Pittsburgh, School of Nursing, [2]University of Pittsburgh, School of Medicine, [3]UPMC, Department of Otolaryngology, [4]University

of Pittsburgh, Graduate School of Public Health

D242: TRACHEOSTOMY COMPLICATIONS IN THE EMERGENCY DEPARTMENT: A NATIONAL ANALYSIS OF 38,271 CASES
Maxwell P Kligerman, MD, MPH[1], Anirudh Saraswathulu, BS[1], Rosh K Sethi, MD, MPH[2], Vasu Divi, MD[1]; [1]Stanford University Department of Otolaryngology, [2]Massachusetts Eye and Ear Infirmary

D243: LYMPHEDEMA THERAPY: ACCESS AND OUTCOMES
Courtney B Shires, MD[1], Donna Thomas, BS[1], Tricia Harris, SLP[1], Anas Eid, MD[1], Merry E Sebelik, MD[2]; [1]University of Tennessee Health Science Center, [2]Emory University

D244: SECOND PRIMARY PARAGANGLIOMAS: LONGTERM FOLLOW UP OF HEAD AND NECK PATIENTS
Kevin J Contrera, MD, MPH[1], Valeda Yong, BA[2], Chandana A Reddy, MS[3], Robert R Lorenz, MD[1]; [1]Cleveland Clinic Head and Neck Institute, [2]Case Western Reserve University School of Medicine, [3]Cleveland Clinic Taussig Cancer Institute

D245: MACHINE LEARNING PREDICTION OF 30-DAY READMISSIONS FOLLOWING HEAD AND NECK FREE FLAP RECONSTRUCTION
Michael Wilson, MD, Keith Casper, MD, Kevin Karlic, Kelly Malloy, MD, Ashley Bauer, MD; University of Michigan

D246: POST-OPERATIVE SURVIVAL IN HEAD & NECK CANCER PATIENTS WITH ELEVATED TROPONINS
Gordon Hua, MDCM[1], Marc Levin, BSc[2], Han Zhang, MD, FRCSC[1], Michael Xie, BSc[2], Tobial McHugh[1], Michael Gupta[1]; [1]McMaster University, Department of Surgery, Division of Otolaryngology-Head and Neck Surgery, [2]McMaster Michael G. DeGroote School of Medicine

D247: DEFINING QUALITY FROM THE PATIENT'S PERSPECTIVE: FEASIBILITY OF IMPLEMENTING PROS INTO CLINICAL CARE ACROSS A HEAD AND NECK ONCOLOGY MULTIDISCIPLINARY TEAM
Jennifer R Cracchiolo, MD, Marc A Cohen, MD, Nancy Y Lee, MD, David G Pfister, Richard J Wong; MSKCC

D248: PROPOSING OPTIMAL THRESHOLDS FOR HNSCC FACILITY CASE VOLUME
Sina J Torabi, BA[1], Phoebe Kuo, MD[2], Shayan Cheraghlou, BA[1], Janet Tate, MPH, ScD[3], Benjamin Judson, MD[1]; [1]Yale School of Medicine, Department of Surgery (Section of Otolaryngology), [2]Harvard Medical School, Department of Otolaryngology, [3]Yale School of Medicine

D249: HOSPITAL VOLUME IS AN INDEPENDENT PREDICTOR OF LYMPH NODE YIELD IN PATIENTS UNDERGOING NECK DISSECTION FOR ORAL SQUAMOUS CELL CARCINOMA
Victoria V Noble, BS[1], Daniel A Ermann, MD[1], Sarah Aurit, MPH[1], Peter T Silberstein, MD[1], Aru Panwar, MD[2]; [1]Creighton University School of Medicine, Omaha, Nebraska, [2]Department of Head and Neck Surgical Oncology, Methodist Estabrook Cancer Center, Nebraska Methodist Hospital, Omaha, Nebraska

D250: COSTS ASSOCIATED WITH IMAGING SURVEILLANCE AFTER TREATMENT FOR HEAD AND NECK CANCER
Cheryl C Nocon[1], Aimee Kennedy[2], Jennifer Jaffe[1], Jaclyn Pruitt[1], Kristine Kuchta[1], Mihir K Bhayani[1]; [1]NorthShore University HealthSystem Kellogg Cancer Center, [2]University of Chicago Medical Center

D251: DEVELOPING A PLATFORM FOR VALUE-BASED RISK ASSESSMENT AND BUNDLED NUTRITION AND SUPPORTIVE CARE INTERVENTION FOR HEAD AND NECK CANCER TREATMENT
Debra DeMille, MS, RD, CSO, Tiffany W Hogan, MA, CCC, SLP, Meredith Pauly, MA, CCC, SLP, Brook Batzel, MSN, CRNP, APRNBC, AOCNP, Robert C Goodacre, MBA, LSSBB; Penn Medicine

D252: COST EFFECTIVENESS OF SALVAGE LARYNGECTOMY CLOSURE TECHNIQUES
Mirko Manojlovic Kolarski, MD, David P Goldstein, MD, FRCSC, MSc, Douglas B Chepeha, MD, FRCSC, FACS, MSc, Jonathan C Irish, MD, FRCSC, FACS, MSc, Dale H Brown, MBBCh, BMBCh, FRCSC, Ralph W Gilbert, MD, FRCSC, Patrick J Gullane, MBBCh, FACS, FRCSC, John R De Almeida, MD, FRCSC, MSc; University of Toronto

D253: SURGICAL SITE INFECTION AFFECTS LENGTH OF HOSPITALIZATION AND COST AFTER COMPLEX HEAD AND NECK PROCEDURES.
Nicole L Lebo, MD[1], Lisa Caulley, MD[2], Kednapa Thavorn, PhD[3], Natasha Kekre, MD[4], Sarah Brode, MD[5], Alexandra E Quimby, MD[1], Stephanie Johnson-Obaseki, MD[1]; [1]Department of Otolaryngology - Head & Neck Surgery, University of Ottawa, Ottawa, ON, Canada, [2]Department of Epidemiology Epidemiology Erasmus Medical Centre, Rotterdam, the Netherlands, [3]School of Epidemiology and Public Health, University of Ottawa, Ottawa, ON, Canada, [4]Department of Medicine, Division of Hematology, University of Ottawa, Ottawa, ON, Canada, [5]Department of Medicine, Division of Respirology, University Health Network, Toronto, ON, Canada

D254: DEVELOPMENT OF A HEAD AND NECK ULTRASOUND TRAINING PROGRAM FOR HEAD AND NECK SURGEONS IN RURAL KENYA
Carey B Wood, MD, Kristen H Yancey, Jamie Wiggleton, Kyle Mannion, MD, James L Netterville, MD; Vanderbilt University Medical Center

D255: ADVANTAGES OF MOBILE ENDOSCOPY IN ACADEMIC OTOLARYNGOLOGY
Robert T Cristel, MD[1], Elise Lippmann, MD[1], Taher Valika, MD[2], Virginie Achim[1]; [1]University of Illinois-Chicago, Department of Otolaryngology, [2]Feinberg School of Medicine, Northwester University, Department of Otolaryngology. Ann & Robert H. Lurie Childrens Hospital of Chicago, Division of Otolaryngology Head and Neck Surgery

D256: ASSESSING SURGEON TEAMS IN HEAD AND NECK ONCOLOGIC SURGERY REQUIRING PLASTIC SURGERY RECONSTRUCTION USING THE HEAD AND NECK ONCOLOGIC RECONSTRUCTIVE SURGERY NSQIP
Samantha Tam, MD, MPH, Wenli Dong, MS, Ira L Martin, RN, CPHQ, David M Adelman, MD, PhD, Randal S Weber, MD, Carol M Lewis, MD, MPH; University of Texas MD Anderson Cancer Center

D257: IS NEW ALWAYS BETTER? AN ETHICAL ANALYSIS OF ROBOTIC PARATHYROIDECTOMY.
Andrew J Redmann, MD[1], Alice Tang, MD[2], David Steward, MD[2]; [1]Cincinnati Children's Hospital Medical Center, [2]University of Cincnnati Medical Center

D259: REDUCING REDUNDANCY IN SURGICAL INSTRUMENTATION FOR HEAD AND NECK SURGERY
Jessa E Miller, BS[1], Keith A Casper, MD[2], Kelly M Malloy,

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MD[2]; [1]University of Michigan Medical School, [2]Michigan Medicine Department of Otolaryngology- Head and Neck Surgery

D260: THE FEASIBILITY OF REMOTE MONITORING IN PATIENTS WITH HEAD AND NECK CANCER
Blair Barton, MD[1], Sean Parsel, DO[1], Yvette Peevy, MA, CCCSLP[2], Ryan Winters, MD, FACS[2], Christian Hasney, MD, FACS[2], Brian Moore, MD, FACS[2]; [1]Tulane University, [2]Ochsner Clinic Foundation

D261: COST AND OUTCOMES TRADE-OFFS BETWEEN LENGTH OF STAY AND HOSPITAL READMISSIONS AFTER MICROVASCULAR FREE FLAP RECONSTRUCTION IN HEAD AND NECK SURGERY
Neil N Patel, BA, BS, Brianna Harris, MD, Pratyusha Yalamanchi, MD, Robert M Brody, MD, Karthik Rajasekaran, MD, Rabie M Shanti, DMD, MD, Ara A Chalian, MD, Jason G Newman, MD, Steven B Cannady, MD; Hospital of the University of Pennsylvania

D262: ASSOCIATION BETWEEN FRAILTY STATUS AND POST-OPERATIVE MORBIDITY AND MORTALITY AMONG HEAD AND NECK CANCER PATIENTS: A PROSPECTIVE COHORT STUDY
Shanmugappiriya Sivarajah, BSc, MD, MPHcand, Hadi Seikaly, MD, MA, FRCSC, Caroline Jeffery, MD, MPH, FRCSC, Cheryl Mack, BSc, Hons, MD, MA, PhDCand, FRCPC; University of Alberta

D263: EVALUATING THE FEASIBILITY OF A NURSE-DRIVEN FOLLOW-UP TELEPHONE TRIAGE INTERVENTION TO IMPROVE POST-TREATMENT OUTCOMES IN HEAD AND NECK CANCER PATIENTS UNDERGOING CHEMOTHERAPY AND RADIATION IN THE AMBULATORY SETTING
Susan Varghese, Nurse Practitioner, RN, MSNANP, C; M.D. Anderson Cancer Center

D264: ASSOCIATION OF INSURANCE TYPE WITH TIME COURSE OF CARE IN HEAD AND NECK CANCER
Kyohei Itamura, Niels C Kokot, MD, Uttam K Sinha, MD, Mark S Swanson, MD; Caruso Department of Otolaryngology - Head and Neck Surgery at the Keck School of Medicine of USC

D265: FACTORS ASSOCIATED WITH RECEIVING TREATMENT FOR HEAD AND NECK CANCER AT ACADEMIC AND INTEGRATED CANCER PROGRAMS
Ryan M Carey, MD, Ravi R Shah, MD, Ramie Fathy, BA, Karthik Rajasekaran, MD, Steven B Cannady, MD, Jason G Newman, Jason a Brant; University of Pennsylvania

D266: HEAD AND NECK CANCER SURVIVAL IS RELATED TO TREATMENT FACILITY
Ryan M Carey, MD, Ravi R Shah, MD, Ramie Fathy, BA, Karthik Rajasekaran, MD, Steven B Cannady, MD, Jason G Newman, MD, Jason A Brant, MD; University of Pennsylvania

D267: PAIN AND OPIOID USE AFTER AMBULATORY HEAD AND NECK SURGERY
Michael Z Cheng, Matthew Kim, MD, Anthony Sclafani, MD, David Kutler; Weill Cornell Medical College

D268: SUPPORT GROUP ATTENDANCE AND QUALITY OF LIFE IN CAREGIVERS OF PATIENTS WITH HEAD AND NECK CANCER
Brian H Cameron[1], David D Lam[1], Kyohei Itamura[1], Tamara N Chambers, MD[2], Niels C Kokot, MD[2], Dennis R Maceri, MD[2], Uttam K Sinha, MD[2], Mark S Swanson[2], Brenda Villegas, MS, CCCSLP[2]; [1]Keck School of Medicine of USC, [2]USC Tina and Rick Caruso Department of Otolaryngology - Head and Neck Surgery

D269: BARRIERS TO FOLLOW-UP AND EFFICACY OF INTERVENTIONS IN PATIENTS RECEIVING REFERRAL AT HEAD AND NECK CANCER SCREENINGS
Raquel Zemtsov, MD, MPH[1], Gregory Zemtsov, BA[2], Meredith Tabangin, MPH[3], Mekibib Altaye, PhD[3], Alice Tang, MD[1]; [1]University of Cincinnati College of Medicine, Department of Otolaryngology - Head and Neck Surgery, [2]University of Cincinnati College of Medicine, [3]Cincinnati Children's Hospital Medical Center, Division of Biostatistics and Epidemiology

D270: DENTAL HEALTH IN THE HEAD AND NECK CANCER POPULATION AND THE INFLUENCE ON TIME TO INITIATION OF RADIATION
Andrew J Holcomb, MD, David Schlee, BS, Kavindu Ndeti, BS, Kiran Kakarala, MD, Kevin Sykes, PhD; University of Kansas Medical Center

D271: INTRODUCTION OF PRE-TREATMENT CARE MAP AND NURSE NAVIGATOR TO DECREASE "TIME TO TREATMENT" INTERVAL
Paul G van der Sloot, MD, Carolyn Ruffing, RN; University of Rochester Medical Center

D272: CANDIDATE INDICATORS OF QUALITY CARE FOR THE DIAGNOSIS AND MANAGEMENT OF MEDULLARY THYROID CARCINOMA
Justin Cottrell, MD, Antoine Eskander, MD, Jonathan Irish, MD, Eric Monteiro, MD; University of Toronto Department of Otolaryngology - Head and Neck Surgery

D273: UTILISING A VALUE-BASED HEALTHCARE APPROACH FOR IMPROVED CARE OF HEAD AND NECK ONCOLOGY PATIENTS, THE AMSTERDAM UNIVERSITY MEDICAL CENTRE (UMC)- VUMC LOCATION EXPERIENCES.
J.J. Hendrickx, MD, PhD[1], M. R. Vergeer, MD, PhD[2], F.A. Van der Scheer, MSc[1], H. Bruggink, MSc[3], J Voortman, MD, PhD[4], P. De Graaf, MD, PhD[5], I. M. Verdonck-de Leeuw, PhD[1], M. Van der Steen, MD, MSc[6], I. Matthijssen, MSc[6], C.R. Leemans, MD, PhD[1]; [1]Department of Otolaryngology-Head and neck surgery, Amsterdam University Medical Centre-VUmc location, [2]Department of Radiation Oncology, Amsterdam University Medical Centre-VUmc location, [3]Department of Nutrition and Dietetics, Amsterdam University Medical Centre-VUmc location, [4]Department of Medical Oncology, Amsterdam University Medical Centre-VUmc location, [5]Department of Radiology and Nuclear Medicine, Amsterdam University Medical Centre-VUmc location, [6]Department of Strategy and Innovation, Amsterdam University Medical Centre-VUmc location

D274: OPTIMIZING ANESTHESIA FOR TRANSORAL ROBOTIC SURGERY FOR OROPHARYNGEAL SQUAMOUS CELL CARCINOMA: FACTORS AND OUTCOMES ASSOCIATED WITH PROLONGED PHASE I POSTANESTHESIA RECOVERY
Cassandra L Puccinelli, MD[1], Eric J Moore, MD[1], Daniel L Price, MD[1], Linda X Yin, MD[1], Toby N Weingarten, MD[2], Kathryn M Van Abel, MD[1]; [1]Department of Otolaryngology-Head and Neck Surgery, Mayo Clinic, Rochester, MN 55905 USA, [2]Department of Anesthesiology and Perioperative Medicine, Mayo Clinic, Rochester, MN 55905 USA

D275: TIMELY DISCHARGE OF HEAD AND NECK SURGICAL PATIENTS ALLOWS FOR SAFE AND EFFICIENT CARE.
Nicole M Fowler, MD, FACS, Rohan Joshi, MD, Jason Thuener, MD, Chad Zender, MD, FACS, Pierre Lavertu, MD, FACS, Rod Rezaee, MD; University Hospitals Cleveland Medical Center

D276: DECREASED POST-ACUTE SKILLED NEEDS AND

POSTER LISTINGS

IMPROVED OUTCOMES FOR PATIENTS POST FIBULA FREE FLAP RECONSTRUCTION WHEN EARLY AMBULATION WAS INITIATED POST OP DAY 1: A CASE SERIES
Brett J Fechter, PT, DPT, NCS, Richard B Cannon, MD, Amanda Kull, MD, Luke O Buchmann, MD, Jason P Hunt, MD; University of Utah

D277: HEAD AND NECK SURGERY INPATIENT EXPERIENCE SURVEY PILOT STUDY
Arvind K Badhey, MD, Ameya Jategaonkar, MD, Raymond Chai, MD, Mark Urken, MD, Ilya Likhterov, MD; Icahn School of Medicine at Mount Sinai

D279: COST IMPLICATIONS OF FREE FLAP TAKE-BACKS: BEST TO GET IT RIGHT THE FIRST TIME
Mary Han, BA[1], Bovey Z Zhu, MD[2], Andrea M Park, MD[2], Chase M Heaton, MD[2], Rahul Seth, MD[2], Philip D Knott, MD[2]; [1]School of Medicine, University of California San Francisco, San Francisco, California, [2]Department of Otolaryngology - Head and Neck Surgery, University of California San Francisco, San Francisco, California

D280: QUALITY OF LIFE FOLLOWING VARIED RECONSTRUCTIONS FOR ORAL TONGUE AND FLOOR OF MOUTH CANCER RESECTION DEFECTS
Andrew Larson, MD[1], Mary Han, BA[1], Katherine Webb, BS[2], P. Daniel Knott, MD[1], Rahul Seth, MD[1], Ivan El-Sayed, MD[1], Patrick Ha, MD[1], Jonathan George, MD[1], Chase Heaton, MD[1], William Ryan, MD[1]; [1]University of California, San Francisco, [2]Albany Medical College

D281: TIMING OF SWALLOWING INTERVENTION IMPACTS FUNCTIONAL SWALLOWING OUTCOMES AFTER SURGICAL MANAGEMENT OF OROPHARYNGEAL CANCER
Laishyang Melody Ouyoung, MS, CCC, SLP, Margaret C Nurimba, BA, Susie Nam, MS, CCC, SLP, Brenda Villegas, MS, CCC, SLP, Uttam K Sinha, MD; University of Southern California

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Ritzwan Aslam, DO	2017-2020	Stephen Y. Kang, MD	2017-2020
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J. Kenneth Byrd, MD	2017-2020	Stephen Y. Lai, MD, PhD, FACS	2016-2019
Richard Bigelow Cannon, MD	2018-2021	Abie Mendelsohn, MD	2017-2020
Ricardo L. Carrau, MD	2017-2020	Wojciech K. Mydlarz, MD	2017-2020
Raymond Chai, MD	2017-2020	Daniel W. Nuss, MD	2016-2019
Amy Y. Chen, MD, MPH	2016-2019	Aru Panwar, MD, FACS	2016-2019
Marc Cohen, MD, MPH	2017-2020	Snehal G. Patel, MD, FRCS	2016-2019
Ivan El-Sayed, MD	2016-2019	Eben L. Rosenthal, MD	2016-2019
Antonie Eskander, MD, ScM, FRCSC	2018-2021	Jesse Ryan, MD	2017-2020
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David Goldstein, MD, FRCSC	2017-2020	Paul C. Walker, MD	2016-2019
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Carole Fakhry, MD, MPH	2018-2021	Thomas Julian Ow, MD	2018-2021
Nicole Fowler, MD	2018-2021	Brittny Nicole Tillman, MD	2018-2021
Yarah Haider, MD	2018-2021	Mark Zafereo, MD	2018-2021
Kiran Kakarala, MD	2018-2021	Jose Pedro Zevallos, MD, MPH	2018-2021

AHNS LEADERSHIP

EDUCATION DIVISION

Advanced Training Council

Ara A. Chalian, MD, Chair	2018-2021	Babak Givi, MD, FACS	2018-2021
Don Weed, MD, Co-Chair	2018-2021	Amy Hessel, MD	2018-2021
Amit Agrawal, MD	2018-2021	Derrick Lin, MD	2018-2021
Rodrigo Bayon, MD	2018-2021	Robert Hart Lindau, MD	2018-2021
Amy Y. Chen, MD, MPH	2018-2021	Lisa Orloff, MD	2018-2021
Marc A. Cohen, MD, MPH	2018-2021	William Ryan, MD	2018-2021
Kevin Emerick, MD	2018-2021	Maisie Shindo, MD	2018-2021
Danny Enepekides, MD, FRCS	2018-2021	Chad Zender, MD	2018-2021
Douglas K. Frank, MD, FACS	2018-2021		

Training, Accreditation and Credentialing (TAC) Service

Babak Givi, MD, Chair	2018-2021	Scott McLean, MD, PhD	2018-2021
J. Kenneth Byrd, MD	2018-2021	Cherie-Ann O. Nathan, MD, FACS	2018-2021
Ara A. Chalian, MD	2018-2021	Urjeet Patel, MD, FACS	2018-2021
Charles Stuart Coffey, MD	2018-2021	Liana Puscas, MD	2018-2021
Terry A. Day, MD	2018-2021	Ralph Tufano, MD	2018-2021
Neal D. Futran, MD, DMD	2018-2021	Randal S. Weber, MD	2018-2021
Douglas A. Girod, MD	2018-2021	Donald T. Weed, MD	2018-2021

Patient and Public Education Service

Susan McCammon, Chair	2018-2021	Kelly Malloy, MD	2016-2019
Merry Sebelik, MD, Vice-Chair	2018-2021	Avinash Mantravadi, MD	2016-2019
Rizwan Aslam, DO	2017-2020	Abie Mendelsohn, MD	2017-2020
Arnaud Bewley, MD	2016-2019	Michael Moore, MD	2016-2019
J. Kenneth Byrd, MD	2016-2019	Wojciech Mydlarz, MD	2017-2020
Ricardo Carrau, MD	2017-2020	David Neskey, MD	2017-2020
Raymond Chai, MD	2017-2020	Elizabeth Nicolli, MD	2016-2019
Amy Chen, MD, MPH	2016-2019	Daniel O'Connell, MD	2017-2020
Vasu Divi, MD	2017-2020	Thomas Ow, MD	2017-2020
Mark El-Deiry, MD FACS	2017-2020	Aru Panwar, MD, FACS	2017-2020
Antoine Eskander, MD, ScM, FRCSC	2017-2020	Rusha Patel, MD, FACS	2017-2020
Tanya Fancy, MD	2017-2020	Kumar Alok Pathak, MD, FRCSEd,	2016-2019
D. Gregory Farwell, MD, FACS	2017-2020	FRCS(Glasg.), FRCSC	
Ian Ganly, MD, PhD	2016-2019	Yash Patil, MD	2016-2019
Tamer Ghanem, MD, PhD	2017-2020	Kavita Pattani, MD, MS	2017-2020
Laureano Giraldez-Rodriguez	2017-2020	A. Pinheiro, MD, PhD	2016-2019
Zhen Gooi, MD	2016-2019	Phil Pirgousis, MD, DMD	2017-2020
Christine Gourin, MD	2016-2019	Liana Puscas, MD	2017-2020
Neil Gross, MD, FACS	2017-2020	Jesse Ryan, MD	2017-2020
Greg Hartig, MD	2017-2020	Zoukaa Sargi, MD, MPH	2016-2019
Chase Heaton, MD	2017-2020	Yelizaveta Shnayder, MD, FACS	2017-2020
Amy Hessel, MD	2016-2019	David Shonka, MD	2018-2021
Benjamin Judson, MD	2016-2019	Uttam Sinha, MD	2018-2021
Russel Kahmke, MD	2017-2020	Russell Smith, MD, FACS	2016-2019
Stephen Kang, MD	2017-2020	Carl Snyderman, MD, MBA	2016-2019
Jason Kass, MD, PhD	2017-2020	Michael Spafford, MD	2017-2020
Niels Kokot, MD	2018-2021	Giovana Thomas, MD	2017-2020
Jamie Ku, MD, BS	2018-2021	Harold Wanebo, MD	2016-2019
Levi Ledgerwood, MD	2017-2020	Steven Wang, MD, FACS	2017-2020
William Lydiatt, MD	2016-2019	Bharat Yarlagadda, MD	2016-2019
J. Scott Magnuson, MD, FACS	2017-2020		

AHNS LEADERSHIP

CME Compliance & Measurement Service

Paul L. Friedlander, MD, Chair	2018-2021	Jason Leibowitz, MD	2018-2021
Ricardo L. Carrau, MD, Vice-Chair	2018-2020	Susan McCammon, MD	2018-2021
Brain B. Burkey, MD, MEd, FACS	2016-2019	Vikas Mehta, MD	2016-2019
Maria Evasovich, MD, FACS	2018-2021	Steven Joseph Wang, MD, FACS	2017-2020
Robert A. Frankenthaler, MD	2016-2019	Bharat Bhushan Yarlagdda, MD	2018-2021
Christopher Fundakowski, MD, BA	2018-2021		

Head and Neck Certification Strategy Ad Hoc Service

Brian Burkey, MD, MEd, Chair	2019-2020	David Goldenberg, MD	2019-2020
Terry Day, MD	2019-2020	Brian Nussenbaum, MD	2019-2020
Ara Chalian, MD	2019-2020	Randal Weber, MD	2019-2020
Babak Givi, MD, FACS	2019-2020	Donald Weed, MD	2019-2020

Scientific Program/Resident Courses Service

Neil Gross, MD, Co-Chair	2018-2019	Kelly Malloy, MD	2018-2019
Carole Fakhry, MD, MPH, Co-Chair	2018-2019	Brett Miles, MD	2018-2019
Ehab Hanna, MD, President	2018-2019	Vikas Mehta, MD	2018-2019
Bryan Bell, MD, DDS	2018-2019	Marcus Monroe, MD	2018-2019
Carol Bradford, MD	2018-2019	Brian Moore, MD	2018-2019
Joseph Califano, MD	2018-2019	Luc Morris, MD, MSc	2018-2019
Steven Cannady, MD	2018-2019	Urjeet Patel, MD	2018-2019
Steven Chinn, MD, MPH	2018-2019	Karen Pitman, MD	2018-2019
Daniel Clayburgh, MD, PhD	2018-2019	Chris Rassekh, MD	2018-2019
David Cognetti, MD	2018-2019	Jeremy Richmon, MD	2018-2019
Marc Cohen, MD, MPH	2018-2019	James Rocco, MD, PhD	2018-2019
Vasu Divi, MD	2018-2019	Ben Roman, MD	2018-2019
Umamaheswar Duvvuri, MD, PhD	2018-2019	Joseph Scharpf, MD	2018-2019
Ivan El-Sayed, MD	2018-2019	Nicole Schmitt, MD	2018-2019
Audrey Erman, MD	2018-2019	Maisie Shindo, MD	2018-2019
Ian Ganly, MD, PhD	2018-2019	Catherine Sinclair, MD, FRACS	2018-2019
David Goldstein, MD, MSc, FRCSC	2018-2019	Michael Singer, MD	2018-2019
Patrick Ha, MD	2018-2019	Shirley Su, MBBS	2018-2019
Matt Hanasono, MD	2018-2019	Ralph Tufano, MD	2018-2019
Kate Hutcheson, MD	2018-2019	Steven Wang, MD	2018-2019
Benjamin Judson, MD	2018-2019	Sue Yom, MD	2018-2019
Stephen Lai, MD, PhD	2018-2019	Mark Zafereo, MD	2018-2019
Ellie Maghami, MD	2018-2019		

AHNS LEADERSHIP

PATIENT CARE DIVISION

Value & Quality of Care Service

Terry Tsue, MD, Chair	2018-2021
Vasu Divi, MD, Vice-Chair	2018-2020
Nishant Agrawal, MD, FACS	2017-2020
Arnaud Fassett Bewley, MD	2017-2020
Mihir Kiran Bhayani, MD	2017-2020
Carol Bier-Laning, MD	2017-2020
Andres M. Bur, MD	2018-2021
Natalya Chernichenko, MD	2018-2021
Charles Stuart Coffey, MD	2016-2019
Marc Cohen, MD, MPH	2017-2020
Jennifer Rose Cracchiolo, MD	2017-2020
Edward Damrose, MD	2017-2020
Joseph Dort, BSc, MD, MSc	2016-2019
Marcia Eustaquio, MD	2017-2020
Tamer Ghanem, MD, PhD	2017-2020
Richard Goldman, MD	2018-2021
Zhen Gooi, MD	2017-2020
Christine G. Gourin, MD	2016-2019
Evan Graboyes, MD	2017-2020
Chris Hasney, MD, BS	2018-2021
Amy C. Hessel, MD, Ex Officio	2016-2019
Scharukh Jalisi, MD	2017-2020
Bradley Tyler Johnson, MD	2017-2020
Jason Kass, MD, PhD	2017-2020
Sobia Khaja, MD	2016-2019
Christopher Klem, MD, FACS	2016-2019
Miriam Lango, MD	2017-2020
Carol Lewis, MD, MPH	2016-2019
Ryan Li, MD	2017-2020
Ellie Maghami, MD	2016-2019
J. Scott Magnuson, MD	2017-2020
Marcus Matthew Monroe	2016-2019
David Michael Neskey, MD	2017-2020
Daniel A. O'Connell	2017-2020
Ryan Orosco, MD	2018-2021
Aru Panwar, MD, MS	2017-2020
Karen T. Pitman, MD	2016-2019
Rahul Seth, MD	2016-2019
Arun Sharma, MD, MS	2017-2020
William Charles Spanos, MD	2017-2020
Michael Stadler, MD	2018-2021
Baran Devrim Sumer, MD	2016-2019
Andrew B. Tassler, MD	2016-2019
Paul Van der Sloot, MD	2018-2021
Emre Vural, MD	2016-2019
Paul C. Walker, MD	2017-2020
Ron Walker, MD	2017-2020
Steven Joseph Wang, MD, FACS	2017-2020
John W. Werning, MD, DMD	2017-2020

Practice Guidelines & Position Statements Service

Russell Smith, MD, FACS, Chair	2019-2020
Baran Sumer, MD, Vice-Chair	2018-2020
Ameya Asarkar, MD	2018-2021
Natalya Chernichenko, MD	2018-2021
Christopher Fundakowski, MD	2018-2021
Niels Kokot, MD	2018-2021
Jason Leibowitz, MD	2018-2021
Aru Panwar, MD, FACS	2018-2021
Mirabelle Sajisevi, MD	2018-2021
David Shonka, MD	2018-2021
Michael Stadler, MD	2018-2021

Cancer Prevention Services

Ann M. Gillenwater, MD, Chair	2018-2021
Michael Geoffrey, MD, Vice-Chair	2018-2021
Kevin Wang, MD	2018-2021
Greg Ward, MD, Med	2018-2021
Nishant Agrawal, MD, FACS	2017-2020
Genevieve Ann Andrews, MD	2016-2019
Mihir Kiran Bhayani, MD, FACS	2017-2020
Todd Brickman, PhD, MD	2016-2019
Lanceford Chong, MD, MPH	2016-2019
Chad Galer, MD, MA	2016-2019
Ann M. Gillenwater, MD	2016-2019
Zhen Gooi, MD	2017-2020
Gregory Grillone, MD, FACS	2017-2020
Bradley Tyler Johnson, MD	2017-2020
Deepak Kademani, DMD, MD, FACS	2016-2019
Adedoyin Kalejaiye, MD	2017-2020
Wojciech K. Mydlarz, MD	2017-2020
Cherie-Ann Nathan, MD, FACS	2016-2019
Andrew Nemechek, MD	2017-2020
Kavita Pattani, MD, MS	2017-2020
Vicente Resto, MD, PhD	2016-2019
Ryan H. Sobel, MD	2016-2019
William Charles Spanos, MD	2017-2020
Andrew B. Tassler, MD	2017-2020
Steven Joseph Wang, MD, FACS	2017-2020

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Survivorship/Supportive Care/Rehabilitation Service

Carole Fakhry, MD, MPH, Chair	2018-2021	Carol Lewis, MD, MPH	2016-2019
Nishant Agrawal, MD, FACS, Vice Chair	2017-2020	Ilya Likhterov, MD	2017-2020
Genevieve Ann Andrews, MD	2016-2019	Danielle MacNeil, MD, MSc, FRCS(C)	2018-2021
Mihir Bhayani, MD	2017-2020	Matthew Christopher Miller, MD	2016-2019
Elizabeth Blair, MD	2018-2021	Marcus Matthew Monroe, MD	2016-2019
Steven B. Cannady, MD	2016-2019	Michael Geoffrey Moore, MD	2017-2020
Steve S Chang, MD	2016-2019	Mauricio Alejandro Moreno, MD	2017-2020
David M. Cognetti, MD	2016-2019	Barbara Murphy, MD	2018-2021
Andrew M. Coughlin, MD	2016-2019	Cherie-Ann Nathan, MD, FACS	2018-2021
Andrew Day, MD	2018-2021	David Michael Neskey, MD	2017-2020
Joel Epstein, DMD, MSD	2018-2021	Nitin A. Pagedar, MD	2016-2019
Joseph Goodman, MD	2017-2020	Aru Panwar, MD, FACS	2016-2019
Neerav Goyal, MD, MPH	2018-2021	Perminder Parmar, MD	2017-2020
Evan Graboyes, MD	2017-2020	Jeremy Richmon, MD, FACS	2017-2020
Benjamin Greene, MD	2017-2020	Benjamin R. Roman, MD	2016-2019
Patrick Kyongmin Ha, MD, FACS	2018-2021	Vlad Sandulache, MD, PhD	2018-2021
Scharukh Jalisi, MD	2017-2020	Uttam Sinha, MD	2018-2021
Bradley Johnson, MD	2017-2020	William Charles Spanos, MD	2017-2020
Russel Roy Kahmke, MD	2017-2020	Kerstin M. Stenson, MD, FACS	2017-2020
Jamie Ku, MD, BS	2018-2021		

RESEARCH DIVISION

Basic & Translational Service

Richard Wong, MD, Chair	2018-2021	Scott Strome, MD	2018-2021
Jeff Liu, MD, Vice-Chair	2018-2021	Baran Sumer, MD	2018-2021
Joseph Goodman, MD	2018-2021	Marietta Tan, MD	2018-2021
Aviram Mizrachi, MD	2018-2021	Sufi Thomas, PhD	2018-2021
Vlad Sandulache, MD, PhD	2018-2021	Vivian Wu, MD	2018-2021
Natalie Silver, MD, MS	2018-2021	Jose Zevallos, MD, PhD	2018-2021

Clinical Service

Eben Rosenthal, MD, Chair	2018-2021	Neerav Goyal, MD, MPH	2018-2021
Louise Davies, MD MS, Vice-Chair	2018-2021	Jeffrey Liu, MD	2018-2021
Ameya Asarkar, MD	2018-2021	Mark Prince, MD, FRCS	2018-2021
Merrill Biel, MD, PhD	2018-2021	Eleni Rettig, MD	2018-2021
Daniel Faden, MD	2018-2021	Joseph Zenga, MD	2018-2021
Christopher Fundakowski, MD, BA	2018-2021		

Population & Health Service

Amy Chen, MD, MPH, Chair	2018-2021	Brian Moore, MD, FACS	2018-2021
Barry Wenig, MD, Vice-Chair	2018-2020	Anna Pou, MD	2019-2021
Trinita Cannon, MD	2018-2021	Eleni Rettig, MD	2018-2021
Christopher Fundakowski , MD	2018-2021	Benjamin Roman, MD	2018-2021
Yarah Haidar, MD	2018-2021	Fletcher Starnes, MD	2018-2021
Kyle Katten, MD	2018-2021		

AHNS LEADERSHIP

Grants Service

Patrick Ha, MD, FACS, Chair	2018-2021	Natalie Silver, MD, MS, BS	2018-2021
Jose Zevallos, MD, MPH, Vice-Chair	2018-2020	Pawan Kumar, MD	2018-2021
Cherie-Ann Nathan, MD, FACS	2018-2021	Ravindra Uppalwari, MD, PhD	2018-2021
John Sunwoo, MD	2018-2021	Samir Khariwala, MD	2018-2021
Luc Morris, MD MSc	2018-2021	Sufi Thomas, PhD	2018-2021
Marietta Tan, MD	2018-2021	Thomas Ow, MD	2018-2021

Representatives

American Board of Otolaryngology Liaison

Jeffrey Bumpous, MD
2016 - 2019

AAO-HNSF BOG Socioeconomic & Grassroots Representative

Scharukh Jalisi, MD
2017 – 2020

AAO-HNSF Legislative Liaison

J. Scott Magnuson, MD, FACS
2015 – 2018

Head and Neck Cancer Alliance Partnership

Kelly M. Malloy, MD

Head and Neck Cancer Alliance Partnership

Matthew C. Miller, MD
2018 - 2020

American College of Surgeons Commission on Cancer

Brian A. Moore, MD, FACS
2017 – 2020

American College of Surgeons Board of Governors Advisory Council for Otolaryngology/Vice Chair, Development Service

Maie St. John, MD, PhD
2018 - 2021

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The American Head and Neck Society gratefully acknowledges educational grants in support of the Fellows Transoral Robotic Course from the following organizations:

Intuitive Surgical
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NOTES

NOTES

AHNS 10TH INTERNATIONAL CONFERENCE ON HEAD & NECK CANCER

"Survivorship through Quality & Innovation"

JULY 18-22, 2020 • HYATT REGENCY CHICAGO • CHICAGO, ILLINOIS

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https://www.ahns.info/meetings/

MEETING LEADERSHIP

AHNS President: Cherie-Ann Nathan, MD
Conference Chair: Robert L. Ferris, MD, PhD
Program Chair: Eben Rosenthal, MD
Proffered Paper Chair: Ellie Maghami, MD
Poster Chair: Maie St. John, MD, PhD