American Head and Neck Society
2010 Annual Meeting

During the Combined Otolaryngology Spring Meetings

MEETING PROGRAM

April 28 - 29, 2010
Bally's/Paris Las Vegas
Las Vegas, Nevada

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
# Table of Contents

4 General Information  
5 About The American Head & Neck Society  
6 AHNS President  
6 2010 Program Chair  
7 Hayes Martin Lecture  
8 John J. Conley Lecture  
9 Jatin P. Shah Symposium  
10 Guest of Honor  
10 Distinguished Service Award  
11-12 Presidential Citations  
13-15 AHNS Leadership  
15 Past Presidents  
17 Best Paper Awards  
17 Robert Maxwell Byers  
17 Alando J. Ballantyne Resident Research Pilot Grant  
18 Christopher O’Brien Traveling Fellowship  
20 AHNS Accreditation  
21 Commercial Bias Reporting Form  
22 Bally’s Las Vegas Floorplan  
23 Scientific Program  
31 Faculty Listing  
32 Faculty, Presenter & Leadership Disclosures  
33 Oral Papers  
48 Poster Papers  
81 AHNS Certificate of Incorporation  
83 AHNS Constitution & Bylaws  
88 Index

---

### AHNS 2010 Annual Meeting

#### Corporate Supporters

The American Head & Neck Society gratefully acknowledges generous unrestricted educational grants in support of the AHNS 2010 Annual Meeting by the following companies:

#### Platinum Level

- Bristol-Myers Squibb
- Ethicon Endo-Surgery, Inc.

#### Gold Level

- Stryker

#### Bronze Level

- Gyrus ENT, LLC
- Karl Storz Endoscopy-America
- KayPentax
- Medtronic

#### Additional Support:

- Lilly
- OmniGuide

---

### SAVE THE DATE! – AHNS FUTURE MEETING SCHEDULE

#### AHNS 2010 Research Workshop on Biology, Prevention & Treatment of Head & Neck Cancer

- October 28 - October 30, 2010
- Hyatt Regency Crystal City
- Arlington, VA

#### AHNS 2011 ANNUAL MEETING

*during the Combined Otolaryngology Society Meetings (COSM)*

- April 27 - 28, 2011
- Sheraton Chicago Hotel & Towers
- Chicago, IL

#### 8th International Conference on Head & Neck Cancer

- July 21 - 25, 2012
- Metro Toronto Convention Center
- Toronto, ON, Canada

---

The programs and lectures presented at the AHNS 2010 Annual Meeting are copyrighted products of the American Head & Neck Society. Any reproduction or broadcasting without the express consent of the AHNS is strictly prohibited.
General Information

The American Head and Neck Society’s 2010 Annual Meeting
April 28 - 29, 2010

Bally’s Las Vegas

3645 Las Vegas Boulevard South
Las Vegas, NV 89109

COSM On-site Registration Hours
Grand Salon, Casino Level, Bally’s North Tower
Tuesday, April 27 4:00 PM - 7:00 PM
Wednesday, April 28 7:00 AM - 5:00 PM
Thursday, April 29 7:00 AM - 5:00 PM
Friday, April 30 7:00 AM - 5:00 PM
Saturday, May 1 7:00 AM - 4:00 PM
Sunday, May 2 7:00 AM - 10:00 AM

COSM Exhibit Hall Hours
Event Center, Casino Level of Bally’s North Tower
Thursday, April 29 9:00 AM - 4:00 PM
Friday, April 30 9:00 AM - 4:00 PM
Saturday, May 1 9:00 AM - 4:00 PM

COSM Speaker Ready Room Hours
Bronze 1, Casino Level in Bally’s North Tower
Tuesday, April 27 3:00 PM - 7:00 PM
Wednesday, April 28 6:00 AM - 6:00 PM
Thursday, April 29 6:00 AM - 6:00 PM
Friday, April 30 6:00 AM - 6:00 PM
Saturday, May 1 6:00 AM - 5:00 PM
Sunday, May 2 7:00 AM - 10:00 AM

COSM Spouse Lounge Hours
Palace 2, Casino Level, Bally’s North Tower
Wednesday, April 28 8:00 AM - 2:00 PM
Thursday, April 29 8:00 AM - 2:00 PM
Friday, April 30 8:00 AM - 2:00 PM
Saturday, May 1 8:00 AM - 2:00 PM
Sunday, May 2 8:00 AM - 2:00 PM

AHNS Meeting Educational Objectives
The conference is designed to facilitate discussion regarding the approaches used in the diagnosis, treatment, and rehabilitation of head and neck neoplasms throughout the world. Participants should accomplish the following at the conclusion of this event:

• Understand the role of surgery, radiation therapy, chemoradiation, and combined modality therapy in the treatment of head and neck cancer as defined by results from randomized control trials

• Understand the clinical uses of new novel molecular agents in the management of head and neck cancer

• Understand the Role of surgery in the management of thyroid “laboratory” cancer

• Understand the impact of treatment on functional outcome of head and neck cancer patients

• Understand novel approaches to head and neck reconstruction

AHNS 2010 CME Credit Claim Process
Please use the worksheet on page 20 to track the number of CME hours you attend for each activity. After the meeting, an email will be sent to attendees with an on-line link to the survey and claim form.

To Receive Your CME Credit:
AHNS has instituted a new process for claiming CME credits and printing certificates. All attendees wishing to receive a CME certificate for activities attended at the AHNS 2010 Annual Meeting must first complete an on-line meeting evaluation form. Attendees will have access to the on-line meeting evaluation and credit claim form via a link on the AHNS website after the meeting.

Please allow 4-6 weeks for processing before your certificate arrives.
About the American Head & Neck Society

History of the 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.

Mission Statement
The purpose of this society is to promote and advance the knowledge of prevention, diagnosis, treatment and rehabilitation of neoplasms and other diseases of the head and neck, to promote and advance research in diseases of the head and neck, and to promote and advance the highest professional and ethical standards.

Why Join the 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.

For more information about AHNS membership and to apply on-line, please visit www.ahns.info/membercentral, call +1-310-437-0559, ext. 110 or ask at the AHNS desk for additional information.

The Benefits of AHNS Membership:
- Interaction with colleagues dedicated to promoting and advancing the knowledge of prevention, diagnosis, treatment, and rehabilitation of neoplasms and other diseases of the head and neck
- Member rates on all meeting registration fees
- The honor of being a part of our worldwide network of surgeons, physicians and health care professionals dedicated to the prevention and treatment of head and neck cancer
- Opportunities to partake in educational offerings, including those planned by the society and those co-sponsored by the society
- Opportunity to post regional meetings and courses on the AHNS “Related Meetings” web page
- Access to the AHNS member contact information in the “Members Only” section of our web site
- Monthly e-newsletter and annual paper newsletter with updates about the society and head & neck surgery
- Ability to apply for research grant awards offered yearly
- Opportunity to participate on committees and to vote at the annual business meeting

Qualifications for Active Fellowship:
Surgical Applicants must be Diplomats of the American Board of Otolaryngology, Plastic Surgery, or Surgery OR OTHER EQUIVALENT CERTIFICATION BOARD. Additionally, all applicants must be Fellows of the American College of Surgeons, Fellows in the Royal College of Surgeons (FRCS) or equivalent non-surgical organization.

Qualifications for Associate Fellowship:
An applicant for Associate Fellowship must be a physician, dentist, or scientist who has special interest contributions in the field of neoplastic or traumatic diseases of the head and neck.

Qualifications for Candidate Fellowship:
The trainee currently enrolled in an approved residency program in Otolaryngology, Plastic Surgery, or General Surgery or in a Fellowship program approved by the Advanced Training Council may become a Candidate Fellow.

Qualifications for Corresponding Fellowship:
An Applicant for Corresponding Fellowship must be a physician who specializes in the treatment of head and neck cancer, who by their professional associations and publications, would appear in the judgment of Council to be qualified to treat head and neck cancer.

Corresponding Fellows must reside in a country other than the United States or Canada.
John A. Ridge, MD

John Andrew “Drew” Ridge was born in 1950. After attending the University of Chicago he received the Ph.D. in Biochemistry from Stanford University in 1978 and the M.D. in 1981. He pursued residency training in General Surgery at the University of Colorado and both Surgical Research and Surgical Oncology fellowships at the Memorial Sloan-Kettering Cancer Center. From 1989 to 1991 he was Assistant Professor in Residence at the University of California at San Francisco before moving to the Fox Chase Cancer Center in Philadelphia when presented with an opportunity to limit his practice to head and neck oncology. At Fox Chase, he became chief of the Head and Neck Surgery Section and joined the faculty of Temple University. Currently he holds appointments as Senior Member and Professor of Surgical Oncology and of Molecular and Translational Medicine at Fox Chase and as Professor of Surgery and of Otolaryngology-Head & Neck Surgery at Temple. He loves to teach. A surgical oncology fellowship position has been endowed in his name. Dr. Ridge has devoted his academic career to multidisciplinary treatment of head and neck cancer, with a strong commitment to clinical research. He has been influential in the design and execution of several clinical trials evaluating “organ preservation,” the non-surgical management of advanced squamous cancers of the head and neck. He served as Co-Chair of the Head and Neck Committee of the Eastern Cooperative Oncology Group and is a member of the Head and Neck Steering Committee of the Radiation Therapy Oncology Group. He has been a member of the NCCN Head and Neck and Thyroid panels since their inceptions and has been a writing member of both committees. Currently, he is Co-Chair of the NCI Previously Untreated and Locally Advanced Disease Task Force for the CTEP Head and Neck Steering Committee. He is a Governor of the American College of Surgeons. After they met at Sloan-Kettering, he married Elin Sigurdson in 1989. A prominent academic surgical oncologist interested primarily in colorectal cancer, she too works at the Fox Chase Cancer Center. Their son, Lukas, and twin daughters, Kelsey and Hannah, are in college. None of them show the slightest interest in medical or scientific careers. A fencer, Drew holds an “A” classification in Epee and competes internationally. He has been a member of two US Fencing Association Veteran World Championship Teams and has had respectable results on the World Cup circuit. Though he enjoys the Rockies, he fences much better than he skis. Active in many professional organizations, he was part of the first Council of the American Head and Neck Society.

Bhuvanesh Singh, MD, PhD

Bhuvanesh Singh completed his medical degree from the State University of New York - Health Science Center at Brooklyn in 1991 with Distinction in Research. He went on to train in Otolaryngology - Head and Neck Surgery at the State University of New York - Health Science Center at Brooklyn and completed an advanced fellowship in Head and Neck Surgery at Memorial Sloan Kettering Cancer Center. Dr. Singh received his Ph.D. form the University of Amsterdam/Netherlands Cancer Institute. Dr. Singh is currently a tenure track Associate Professor and Associate Member on the Head and Neck Service in the Department of Surgery and the Director of the Laboratory of Epithelial Cancer Biology at Memorial Sloan-Kettering Cancer Center. Dr. Singh has dedicated his career to the improvement of outcome for patients with head and neck cancer, actively participating in clinical care, education and research. Dr. Singh’s research work focuses on the functional characterization of a novel oncogene (SCCRO) that was cloned in his laboratory. Using cell biological, biochemical and animal models, his lab has shown that SCCRO is activated in head and neck cancer and suggests that it is an excellent therapeutic target. His work has been recognized by receipt of numerous awards including the Young Investigator Award from American Society of Clinical Oncology and the George H.A. Clowes, Jr., MD, FACS, Memorial Research Career Development Award from the American College of Surgeons. Dr. Singh has lectured at meeting throughout the world and has authored over 150 peer review papers and 25 book chapters and is a co-author on a soon to be released textbook on head and neck cancer. He is married to Dr. Mitu Saggar with whom he has three sons.
Adel El-Naggar, M.D.

Adel El-Naggar, M.D., Ph.D., is an internationally renowned head and neck pathologist with 20 years experience in this field. He contributed extensively to the histopathology, clinicopathologic, flow cytometric, and molecular diagnostics of head and neck tumors with over 400 peer-reviewed publications. He has made a significant contribution integrating molecular and biological markers in the diagnosis and management of head and neck cancer. One of his major contributions was in 1990 with the establishment of the first comprehensive tissue acquisition programs in the nation. Through genomic analysis, his group has, for the first time, identified a set of genes that distinguishes conventional squamous carcinoma from other phenotypic squamous carcinoma variants. He was the first to identify loss of imprinting at the IGF-2 gene in head and neck squamous cell carcinoma, and the t(11:19) translocation as a sole cytogenetic alteration in mucoepidermoid carcinoma of salivary gland. Dr. El-Naggar is also a leader in head and neck surgical pathology and was selected to outline the molecular alterations in salivary gland tumors for WHO classifications of head and neck tumors. In 2002 he established and directs the head and neck cancer pathology training program at M. D. Anderson Cancer Center. In 1997, Dr. El-Naggar was awarded The B. Rothschild Senior Research Scholarship at the Curie-Institute in France, and he holds the Kenneth D M üller Endowed Professorship. He is the recipient of the Presidential Citation of The American Head and Neck Surgical Society, the highest honor bestowed by this society. Nationally, Dr. El-Naggar led the Correlative Science Subcommittee of the SWOG Head and Neck Committee from 2002-2006, is the only pathologist on the NCI-Head and Neck Steering Committee, and is a member of the RTOG Steering, Pathology and Surgery Committees.

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.
A leader in international clinical trials research since 1977, Dr. Comis is also a champion for patient access to cancer clinical trials, spearheading national efforts to raise awareness about the pivotal role of cancer clinical trials in cancer prevention, detection and treatment.

Dr. Comis was elected to the Board of Directors of the American Society of Clinical Oncology, National Coalition for Cancer Research and the American Radium Society. He has served on the Editorial Board of the Journal of Clinical Oncology, Cancer Research and Clinical Cancer Research. He is Chair of the Clinical Trials Team of C-Change. He has served ASCO in a variety of capacities including Chair of the Program, Nominating and Audit Committees, as well as a member of the Executive Committee.

Dr. Comis was elected as a Diplomate of the American Board of Internal Medicine, and a member of the American College of Physicians-American Society of Internal Medicine.

Robert L. Comis, MD

Robert L. Comis, MD, President and Chairman of the Coalition of Cancer Cooperative Groups, is Professor of Medicine and Director of the Drexel University Clinical Trials Research Center, Philadelphia, and the Group Chair of the Eastern Cooperative Oncology Group (ECOG).

A graduate of Fordham University in New York City, he received his medical degree from SUNY Health Science Center School of Medicine in Syracuse, NY, where he also completed his medical internship and medical residency. He served as a Staff Associate at the National Cancer Institute, Bethesda, Maryland and completed a Medical Oncology Fellowship at The Sidney Farber Cancer Center at Harvard Medical School in Boston, MA. Dr. Comis is a Diplomat of the American Board of Internal Medicine, and a member of the American College of Physicians-American Society of Internal Medicine.
Lectures

Jatin P. Shah Symposium

Jatin P. Shah, MD

Professor Jatin P. Shah graduated from the Medical College of MS University in Baroda, India, and received his training in Surgical Oncology and Head and Neck Surgery at Memorial Sloan Kettering Cancer Center. He is Professor of Surgery, at the Weil Medical College of Cornell University, and Chief of the Head and Neck Service, Leader of the Head and Neck Disease Management Team, and holds The Elliott W. Strong Chair in Head and Neck Oncology at Memorial Sloan-Kettering Cancer Center in New York City.

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 is Founder of The International Federation of Head and Neck Oncologic Societies, in 1986. He currently serves as Chairman of the AJCC task force on Head and Neck Oncology. He was Chairman of the Joint Council for advanced training in head and neck oncologic surgery in the USA. He was also Chairman of The 4th International Conference on Head and Neck Cancer in Toronto in 1996. He has served in varying capacities for The American Board of Surgery, and The American College of Surgeons.

Professor Shah has been the recipient of numerous awards from various parts of the world, and is the recipient of honorary fellowships from The Royal College of Surgeons of Edinburgh, London and Australia. He holds Honorary PhD, degrees from the Catholic University of Louvain, in Belgium and the University of Athens, in Greece. He is recipient of the Blokhin Gold medal, the highest Honor in Oncology in Russia. He has been elected as an honorary member of several head and neck societies in Europe, Asia, Australia, Africa and Latin America. He has been continuously listed in the “Best Doctors in America” directories for several years. He serves on the Editorial and Review Boards of 18 scientific journals and has published over 300 peer-reviewed articles, 50 book chapters and 7 books. His textbook of Head and Neck Surgery and Oncology won First Prize from The British Medical Association and The Royal Society of Medicine and was awarded the George Davey Howells Prize from the University of London, for the best published book in otolaryngology in the preceding five years.

He is a much sought after speaker who has delivered over 1000 scientific presentations including, 59 eponymous lectures and keynote addresses, and visiting professorships in the United States, Canada, United Kingdom, Scotland, Sweden, Belgium, Germany, Italy, Spain, Poland, Russia, Croatia, Turkey, Egypt, South Africa, India, China, Korea, Japan, Hong Kong, Taiwan, Singapore, Phillipines, Australia, Argentina, Brazil, Chile, Peru, Equador, Venezuela, Panama, and Mexico.

In recognition of his outstanding contributions, and World Leadership in Head and Neck Surgery, Memorial Sloan Kettering Cancer Center, has established the “Jatin Shah Chair in Head and Neck Surgery and Oncology”, The International Federation of Head and Neck Oncologic Societies 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 it’s annual meeting.
**Guest Of Honor**

**Andy Trotti, III, MD**

Dr. Trotti is a Professor and Director of Clinical Trials in Radiation Oncology at the Moffitt Cancer Center. He is recognized for his expertise in Head and Neck (H&N) cancer and in the measuring, reporting and mitigating the adverse effects of H&N cancer treatment. His interests include improving the efficacy of radiotherapy in head and neck cancer clinical trials through integration of fractionation, cytotoxic agents and biologics. He has a special interest in human papilloma virus (HPV)-related cancers and is developing a large multicenter trial for reducing toxicity in this population. He currently serves as the Co-Chair of the NCI H&N Steering Committee responsible for development and approval of Phase II and III trials. He is also Co-Chair of the Head and Neck Committee for the Radiation Therapy Oncology Group (RTOG), and leads the radiotherapy subgroup for the NCCN H&N Committee. Honors include the annual Wharton Lecturer at Princess Margaret Hospital on the “Evolution of Adverse Event Reporting in Oncology.” He has co-authored several landmark RTOG studies of fractionation and organ preservation. He is recognized for his work in developing the NCI adverse event (AE) grading dictionaries (NCI-CTCAE) now widely used in oncology.

**Distinguished Service Award**

**Mark K. Wax, MD**

Mark K. Wax graduated from the University of Toronto Otolaryngology, Head and Neck Surgery Program in 1985. He then went into private practice at the Oshawa Clinic for five years. Wishing to pursue more of an academically oriented career, he completed a Joint Council Oncologic and Reconstructive Fellowship under David Bryant in Toronto, Ontario. Following this, he moved to West Virginia University where for five and a half years he contributed to development of a Head and Neck Oncologic Program. Following a brief stint in SUNY at Buffalo, he relocated in 1990 to Oregon Health and Sciences University. There he became the Director of Microvascular and Reconstructive Surgery. Since that time, Dr. Wax has helped to build a busy multidisciplinary and multifaceted reconstructive program.

Dr. Wax has published many articles over the last decade. He has 160 publications in the peer reviewed literature, has co-authored greater than 20 chapters, and is the co-editor of two textbooks. Currently he sits on the editorial board of three major otolaryngology journals and contributes review articles to many others.

Dr. Wax is a professor of otolaryngology, and has been program director at OHSU for eight years. During this time he has successfully seen the program reaccredited for the full 5 year compliment.

Dr. Wax has had a fellowship in Microvascular and Reconstructive training that has been accredited through the AAFPRS. He has trained 10 fellows, the majority of whom are now in academic head and neck practices. Dr. Wax has been active in the American Head and Neck Society serving on multiple committees until he became treasurer in 2004. He currently serves on the executive committee of the society and the foundation. One of his major accomplishments has been to streamline the financial structure of the society and foundation with the integration of a professional management group. At the same time he has brought financial stability to the society through a precise savings plan.

In 2007 Dr. Wax became the coordinator for education for the AAOHNS. In this position he has helped to oversee the educational activities of the overall society. He has helped develop a collaborative program of education between the societies that seeks to educate residents in head and Neck Oncologic and ablative surgery.
Thomas F. Pajak, MD

Thomas F. Pajak, Ph.D., served as the RTOG Group (lead) Statistician for 23 years, from 1981 to 2004. He continues to work with RTOG investigators as a Senior Statistician. Dr. Pajak has focused on head and neck cancer clinical trials since his first day at RTOG. He was involved in the design, conduct, and analyses of two RTOG landmark studies: the laryngeal preservation trial and the postoperative chemoradiation trial.

Dr. Pajak received his doctoral degree from the State University of New York at Buffalo. While in the program, he worked as a statistical intern in the Southwest Oncology Group (SWOG) Statistical Center at M. D. Anderson Cancer Hospital. After earning his doctorate, Dr. Pajak worked as a statistician for the Cancer and Leukemia Group B (CALGB), the Western Cancer Study Group (WCSG), and the Cancer Center at the Bowman Gray School of Medicine. In the late 1990s, Dr. Pajak worked as the Group (lead) statistician with Dr. Samuel Wells and other surgeons from the American College of Surgeons in both creating a new surgical cooperative group (ACoSOG) and obtaining the initial National Cancer Institute (NCI) grant to fund its activities.

Besides being an RTOG Senior Statistician, Dr. Pajak is an adjunct Associate Professor in the Department of Radiation Oncology at Thomas Jefferson University Hospital, and has been an editor on the American Editorial Board for the International Journal of Radiation Oncology Biology Physics since 1988. Dr. Pajak serves on various data monitoring and safety boards and is an external consultant for head and neck cancer trials. He also serves as a reviewer or consultant for various NCI committees. He is presently a member of the NCI steering committee for head and neck trials. He also has served as the elected spokesman for his fellow cooperative Group Statisticians.

While his publications have encompassed all major adult cancers, his current research interests are head and neck cancers, pathology, and tumor markers. Dr. Pajak has been involved in research testing proposed pathology systems and tumor markers to classify disease for their independent prognostic value and then with implementing the markers in clinical trials. Dr. Pajak is currently involved in designing trials for patients with human papillomavirus-positive oropharyngeal tumors. In particular, he is collaborating with clinicians and other statisticians in defining a very favorable patient group in whom de-intensified treatments can be tested against the standard of care chemoradiation regimen.

Walter J. Curran, MD

Walter J. Curran was appointed Executive Director of Winship Cancer Institute in September, 2009. He joined Emory in January, 2008, as the Lawrence W. Davis Chair of Radiation Oncology and Chief Medical Officer of Winship Cancer Institute.

Prior to joining Emory, Dr. Curran was Chairman of Radiation Oncology at Thomas Jefferson University in Philadelphia, Pennsylvania. He currently serves as Group Chairman and Principal Investigator of the Radiation Therapy Oncology Group (RTOG), a National Cancer Institute-funded cooperative group, a position he has held since 1997.

Dr. Curran, who is a Georgia Cancer Coalition Distinguished Scholar, has been a principal investigator on several National Cancer Institute grants and is considered an international expert in the management of patients with locally advanced lung cancer and malignant brain tumors. He has led several landmark clinical and translational trials in both areas and is responsible for defining a universally adopted staging system for patients with malignant glioma. He has authored or co-authored more than four hundred abstracts and scholarly papers, as well as numerous presentations, reviews and book chapters. He has been chairman or co-chairman of more than 40 clinical trials and a reviewer for twelve national/international journals. He serves as the Founding Secretary/Treasurer of the Coalition of Cancer Cooperative Groups and a Board Member of the Georgia Center for Oncology Research and Education (GA CORE). Dr. Curran is the only radiation oncologist to serve as Director of a National Cancer Institute Designated Cancer Center.

Dr. Curran is a Fellow in the American College of Radiology and has been awarded honorary memberships in the European Society of Therapeutic Radiology and Oncology and the Canadian Association of Radiation Oncology. In 2006, he was named the leading radiation oncologist/cancer researcher in a peer survey by the journal Medical Imaging. Under Dr. Curran’s leadership Emory’s Radiation Oncology Department has been recently selected as a “Top Five Radiation Therapy Centers to Watch in 2009” by Imaging Technology News. This review recognizes the most forward-thinking, U.S.-based cancer treatment centers, which have adopted advanced technology to optimize treatment and make a difference in patient care.

Dr. Curran graduated cum laude from Dartmouth College, received his MD degree from the Medical College of Georgia and is a Board Certified Radiation Oncologist. Curran completed his residency in the Department of Radiation Therapy at the University of Pennsylvania Medical Center and his internship in internal medicine at Presbyterian University of Pennsylvania Medical Center in Philadelphia. Chief Medical Officer, Emory Winship Cancer Institute
Corey J. Langer, MD

Corey J. Langer is the Director of Thoracic Oncology at the Abramson Cancer Center of the University of Pennsylvania and a Professor of Medicine in the Hematology-Oncology Division since June of 2008. Previously he served as the Director of Thoracic Medical Oncology at the Fox Chase Cancer Center and as an Associate Professor in the Department of Medicine at Temple University in Philadelphia, Pennsylvania.

Dr. Langer earned his combined Bachelor of Arts and Doctor of Medicine degrees from Boston University in Boston, Massachusetts in 1981. After completion of his internship and residency at Graduate Hospital of the University of Pennsylvania in Philadelphia, Dr. Langer completed a fellowship in Hematology/Oncology at Presbyterian University of Pennsylvania Medical Center and an oncology fellowship at AOH/Fox Chase Cancer Center.

Through his academic and cooperative group affiliations, Dr. Langer is the principal investigator in several ongoing clinical research protocols focusing on the management of non-small cell and small cell lung cancers as well as head and neck cancer. Specifically, Dr. Langer’s research focus is in the area of salvage therapy, concurrent chemotherapy and radiation regimens, and oncologic therapy for the elderly and those with compromised functional status.

Presidential Citations

Dr. Langer has been published in numerous peer-reviewed journals including Cancer, Journal of the National Cancer Institute, New England Journal of Medicine, Journal of Clinical Oncology, and Journal of Thoracic Oncology. He has served on the editorial board of the Journal of Clinical Oncology, Japanese Journal of Clinical Oncology, Clinical Lung Cancer and Clinical Advances in Hematology and Oncology. Additionally, Dr. Langer serves as a reviewer for several journals including Journal of Clinical Oncology, Lung Cancer, Cancer Investigation, Annals of Oncology, Clinical Cancer Research, Lancet, and Cancer Chemotherapy and Pharmacology.

He is a member of ASCO, AACR, IASLC, and the GOC, as well as a member of the core head and neck and thoracic committees of both the ECOG and Radiation Therapy Oncology Group (RTOG). He is also the Chair of the Medical Oncology Committee of the RTOG and its Vice Chair; and he serves as the Chair of the Head and Neck Cancer NCDB (National Cancer Database of the American College of Surgeons. He also serves on the Scientific Advisory Board of the Geriatric Oncology Consortium and previously served on the NCCN. He has also served as the Chair of the Research Strategy Committee of Oncology Physician’s Network, a research consortium in the Delaware Valley, and will help spearhead a similar process through the University of Pennsylvania Oncology Network.

Dr. Langer is married, with a daughter age 25 and a son age 19. He is also immediate past President of Delaware Valley Poets, for which he helps to conduct monthly readings.
AHNS Leadership

Officers of the AHNS

President: John A. Ridge, MD, PhD
President-Elect: David W. Eisele, MD
Vice-President: Carol R. Bradford, MD
Secretary: Dennis H. Kraus, MD
Treasurer: Mark W. Wax, MD
Past Presidents: Wayne M. Koch, MD
Gregory T. Wolf, MD
Randal S. Weber, MD
Fellows-At-Large:
Paul L. Friedlander, MD 2007-2010
Shelley McQuone, MD 2009-2012

Credentials Committee

John A. Ridge, MD, PhD (Chair) 2009-2010
Dennis H. Kraus, MD (Ex Officio) 2007-2010
Gregory T. Wolf, MD 2008-2010
Wayne M. Koch, MD 2009-2011
Eben L. Rosenthal, MD 2007-2010
John W. Werning, MD 2009-2012

Data Base Committee

Marc D. Coltrera, MD (Chair) 2007-2011
Daniel G. Deschler, MD 2007-2011
Miriam Lango, MD 2007-2011
Ellie Maghami, MD 2007-2011
William B. Armstrong, MD 2008-2010

Education Committee

Floyd “Chris” Holsinger, MD (Chair) 2007-2010
Anna Maria Pou, MD 2004-2010
David Myssiorek, MD 2005-2011
Rui Fernandes, MD, DMD 2007-2010
David Goldenberg, MD 2007-2010
David I. Rosenthal, MD 2007-2010
Joseph A. Brennan, MD 2008-2011
Brian B. Burkey, MD 2008-2011
Kerstin M. Stenson, MD 2008-2011
Erich M. Sturgis, MD 2009-2012
Theodoros N. Teknos, MD 2009-2012

Endocrine Committee

Gary L. Clayman, MD, DDS (Chair) 2007-2010
Ashok R. Shaha, MD (Ex Officio) 2007-2010
Quan-Yang Duh, MD 2007-2010
Keith S. Heller, MD 2007-2010
Christopher R. McHenry, MD 2007-2010
Gregory L. Randolph, MD 2007-2010
Maisy Shindo, MD 2007-2010
Robert A. Sofferman, MD 2007-2010
David J. Terris, MD 2007-2010
Ralph P. Tufano, MD 2007-2010
Kevin T. Brumund, MD 2009-2012
Russell B. Smith, MD, FACS 2009-2012

Finance Committee

Amy Chen, MD, MPH (Chair) 2008-2011
Mark K. Wax, MD (Ex Officio) 2004-2010
David J. Terris, MD 2008-2010
Scott E. Strome, MD 2009-2011

History Committee

Randal S. Weber, MD (Chair) 2006-2010
Jeremy L. Freeman, MD 2008-2010
Bruce H. Haughey, MD 2008-2010
Henry T. Hoffman, MD 2008-2010
Pierre Lavertu, MD 2008-2010
William J. Richtsmeier, MD, PhD 2008-2010
Jesus E. Medina, MD 2009-2011
Stephen Y. Lai, MD, PhD 2009-2011

Awards Committee

Marilene B. Wang, MD (Chair) 2007-2010
Joseph A. Califano, MD 2006-2012
William R. Carroll, MD 2007-2010
David L. Schwartz, MD 2007-2010
Duane A. Sewell, MD 2007-2010
James Rocco, MD, PhD 2008-2011
M. Boyd Gillespie, MD 2009-2012

Ad Hoc Reconstructive Committee

Eben L. Rosenthal MD (Chair) 2009-2012
Joseph J. Disa, MD 2009-2011
Neil D. Futran, MD, DMD 2009-2011
Derrick Lin, MD 2009-2010
Mark K. Wax, MD 2009-2012
Donald T. Weed, MD 2009-2010

Advanced Training Council (ATC)

Ashok R. Shaha, MD (Chair) 2002-2012
William M. Lydiatt, MD (Secretary) 2007-2012
Joseph A. Califano, MD 2007-2012
Ara A. Chalian, MD 2007-2012
Douglas B. Chepeha, MD 2007-2012
Barry L. Wenig, MD 2007-2012
Jeffrey M. Bumpous, MD 2008-2013
Ramon Esclamado, MD 2008-2013
Kerstin M. Stenson, MD 2009-2014
Neal Topham, MD 2009-2014

Constitution and By-Laws Committee

Elizabeth A. Blair, MD 2004-2010
Brandon G. Bentz, MD 2007-2010

CME Compliance Committee

Ellie Maghami, MD (Chair) 2007-2011
Dennis H. Kraus, MD (Ex Officio) 2007-2010
D. Gregory Farwell, MD, FACS 2008-2010
Paul L. Friedlander, MD 2008-2010
Neil D. Futran, MD, DMD 2008-2010
Douglas A. Giord, MD 2008-2010
Wesley L. Hicks, Jr., MD 2008-2010
Robert Ferris, MD, PhD (Ad hoc) 2009-2011
Jeffrey D. Spiro, MD 2009-2011

Committees of the AHNS

Ad Hoc Reconstructive Committee

Eben L. Rosenthal MD (Chair) 2009-2012
Joseph J. Disa, MD 2009-2011
Neil D. Futran, MD, DMD 2009-2011
Derrick Lin, MD 2009-2010
Mark K. Wax, MD 2009-2012
Donald T. Weed, MD 2009-2010

Advanced Training Council (ATC)

Ashok R. Shaha, MD (Chair) 2002-2012
William M. Lydiatt, MD (Secretary) 2007-2012
Joseph A. Califano, MD 2007-2012
Ara A. Chalian, MD 2007-2012
Douglas B. Chepeha, MD 2007-2012
Barry L. Wenig, MD 2007-2012
Jeffrey M. Bumpous, MD 2008-2013
Ramon Esclamado, MD 2008-2013
Kerstin M. Stenson, MD 2009-2014
Neal Topham, MD 2009-2014

Awards Committee

Marilene B. Wang, MD (Chair) 2007-2010
Joseph A. Califano, MD 2006-2012
William R. Carroll, MD 2007-2010
David L. Schwartz, MD 2007-2010
Duane A. Sewell, MD 2007-2010
James Rocco, MD, PhD 2008-2011
M. Boyd Gillespie, MD 2009-2012

CME Compliance Committee

Ellie Maghami, MD (Chair) 2007-2011
Dennis H. Kraus, MD (Ex Officio) 2007-2010
D. Gregory Farwell, MD, FACS 2008-2010
Paul L. Friedlander, MD 2008-2010
Neil D. Futran, MD, DMD 2008-2010
Douglas A. Giord, MD 2008-2010
Wesley L. Hicks, Jr., MD 2008-2010
Robert Ferris, MD, PhD (Ad hoc) 2009-2011
Jeffrey D. Spiro, MD 2009-2011

Constitution and By-Laws Committee

David W. Eisele, MD (Chair) 2004-2010
Dennis H. Kraus, MD (Ex Officio) 2007-2010
Elizabeth A. Blair, MD 2004-2010
Brandon G. Bentz, MD 2007-2010

www.ahns.info
AHNS Leadership

Humanitarian Committee
Wayne M. Koch, MD (Chair) 2009-2012
Carol R. Bradford, MD 2009-2012
Salvatore M. Caruana, MD 2009-2011
Mark D. DeLacure, MD 2009-2011
Douglas A. Girod, MD 2009-2012
Dennis H. Kraus, MD 2009-2012
James P. Malone, MD 2009-2011
Andrew J. Nemechek, MD 2009-2011
James L. Netterville, MD 2009-2012
Randall P. Owen, MD 2009-2012
K. Thomas Robbins, MD 2009-2011
Carol G. Shores, MD, PhD 2009-2012
James D. Smith, MD  2009-2011

Nominating Committee
Wayne Koch, MD (Chair) 2009-2010
Randal S. Weber, MD 2007-2010
Gregory T. Wolf, MD  2008-2011
Robert L. Ferris, MD, PhD 2009-2010
Richard J. Wong, MD  2009-2010

Prevention and Early Detection Committee
Gady Har-El, MD (Chair) 2007-2010
Christine G. Gourin, MD 2003-2010
Anna Maria Pou, MD 2003-2010
Wendell G. Yarbrough, MD 2003-2010
M. Boyd Gillespie, MD, MS 2004-2010
Jonathan Irish, MD 2004-2010
Elizabeth A. Blair, MD 2007-2010
Ann M. Gillenwater, MD 2007-2010
Daniel D. Lydiatt, MD, DDS 2007-2010
Ivan El-Sayed, MD 2008-2011
Amy C. Hessel, MD 2008-2011
Donald T. Weed, MD 2008-2011
Nishant Agrawal, MD  2009-2012

Annual Meeting Program Committee
Bhuvanesh Singh, MD, PhD (Chair) 2009-2010
Carol M. Bier-Laning, MD 2009-2010
Elizabeth A. Blair, MD 2009-2010
Jay O. Boyle, MD 2009-2010
Joseph A. Califano, MD 2009-2010
Thomas E. Carey, PhD 2009-2010
Claudio R. Cernea, MD 2009-2010
Terry A. Day, MD, FACS 2009-2010
Daniel G. Deschler, MD 2009-2010
Robert L. Ferris, MD, PhD 2009-2010
Gerry F. Funk, MD 2009-2010
Matthew Fury, MD  2009-2010
Neal D. Futran, MD, DMD 2009-2010
David Goldenberg, MD 2009-2010
Christine G. Gourin, MD 2009-2010
Jennifer R. Grandis, MD 2009-2010
Neil Gross, MD  2009-2010
Paul M. Harari, MD  2009-2010
Gady Har-El, MD 2009-2010
Floyd “Chris” Holsinger, MD 2009-2010
Michael Kupferman, MD 2009-2010
Stephen Y. Lai, MD, PhD 2009-2010
Nancy Lee, MD 2009-2010
William M. Lydiatt, MD 2009-2010
Ellie Maghami, MD 2009-2010
Bharat Mittal, MD 2009-2010
Kepal N. Patel, MD 2009-2010
Snehal Patel, MD 2009-2010
Mark Prince, MD  2009-2010
James Rocco, MD, PhD 2009-2010
David L. Schwartz, MD  2009-2010
Michiel van den Brekel, MD, PhD 2009-2010
Marilene B. Wang, MD 2009-2010
Richard J. Wong, MD 2009-2010
Bevan Yueh, MD 2009-2010

Publications Committee
Bevan Yueh, MD (Chair) 2006-2010
Paul A. Levine, MD (Ex Officio) 2006-2010
Elliott Abemayor, MD, PhD 2008-2010
Peter E. Andersen, MD  2008-2010
Brandon G. Benz, MD 2008-2010
Bruce J. Davidson, MD  2008-2010
Egbert De Vries, MD  2008-2010
Paul L. Friedlander, MD 2008-2010
M. Boyd Gillespie, MD, MS 2008-2010
David Goldstein, MD  2008-2010
Christine G. Gourin, MD  2008-2010
Christopher Klem, MD  2008-2010
William I. Kuhel, MD  2008-2010
Derrick Lin, MD  2008-2010
Judith C. McCaffrey, MD 2008-2010
Frank R. Miller, MD  2008-2010
Karen T. Pitman, MD  2008-2010
Anna Marie Pou, MD  2008-2010
Mike Yao, MD  2008-2010
Robert L. Ferris, MD, PhD 2009-2011
Dennis H. Kraus, MD 2009-2011
Steven Y. Lai, MD, PhD 2009-2011
Amy-Anne Donatelli Lassig, MD 2009-2011
William M. Lydiatt, MD  2009-2011
Eduardo Mendez, MD  2009-2011
Frank Ondrey, MD  2009-2011
William J. Richtsmeier, MD, PhD  2009-2011
John A. Ridge, MD, PhD  2009-2011
K. Thomas Robbins, MD  2009-2011
James Rocco, MD, PhD  2009-2011
Russell B. Smith, MD, FACS  2009-2011
David J. Terris, MD  2009-2011

Quality Committee
Amy Chen, MD (Chair) 2006-2012
Bruce H. Campbell, MD 2006-2012
Bruce J. Davidson, MD 2006-2012
Amy C. Hessel, MD 2006-2012
Wayne M. Koch, MD 2006-2012
William M. Lydiatt, MD  2006-2012
Neil Gross, MD  2006-2012
Snehal Patel, MD, MS, FRCS  2006-2012
John A. Ridge, MD, PhD  2006-2012
Ralph P. Tufano, MD  2006-2012
Randal S. Weber, MD  2006-2012
Robert L. Witt, MD, FACS  2006-2012
Bevan Yueh, MD  2006-2012
Kerstin M. Stenson, MD  2007-2010
Peter M. Hunt, MD 2009-2012
Michael Kupferman, MD 2009-2012
**Relative Value and CPT Advisory Committee**

Wayne M. Koch, MD (Chair) 2006-2012  
Dennis H. Kraus, MD (Ex Officio) 2007-2010  
Carol R. Bradford, MD 2006-2012  
John A. Ridge, MD, PhD 2006-2012  
Richard V. Smith, MD 2006-2012  
Bert W. O’Malley, Jr., MD 2007-2010  
Scharukh Jalisi, MD 2009-2012  
Michael J. Kaplan, MD 2009-2012  
Jason Newman, MD 2009-2012  
John M. Truelson, MD 2009-2012  
Robert A. Weisman, MD 2009-2012  
Richard V. Smith, MD 2006-2012  
Bert W. O’Malley, Jr., MD 2007-2010  
Scharukh Jalisi, MD 2009-2012  
Michael J. Kaplan, MD 2009-2012  
Jason Newman, MD 2009-2012  
John M. Truelson, MD 2009-2012  
Robert A. Weisman, MD 2009-2012

**Research Committee**

Cherie Ann Nathan (Chair) 2009-2012  
Robert L. Ferris, MD, PhD (Co-Chair) 2006-2012  
Francisco J. Civantos, MD (Co-Chair) 2008-2011  
Eric Genden, MD 2007-2010  
Hernan E. Gonzalez, MD 2007-2010  
Neil Gross, MD 2007-2010  
Richard L. Scher, MD 2007-2010  
Brian L. Schmidt, MD, PhD, FACS 2008-2011  
Duane A. Sewell, MD 2008-2011  
Steven J. Wang, MD 2008-2011  
Ayman Amin, MD 2009-2012  
Miriam Lango, MD 2009-2012  
Kepal N. Patel, MD 2009-2012  
Vicente Resto, MD, PhD 2009-2012

**Website Committee**

Karen T. Pitman, MD (Chair) 2009-2012  
Richard J. Wong, MD (Co-Chair) 2009-2012  
Dennis H. Kraus, MD (Ex Officio) 2007-2010  
Brian B. Burkey, MD 2006-2012  
Peter E. Andersen, MD 2009-2012  
Mark A.S. Varvares, MD 2009-2012

**Representatives**

**American College of Surgeons Board of Governors**

John A. Ridge, MD, PhD 2009-2012

**American Board of Otolaryngology Liaison**

Floyd “Chris” Holsinger, MD 2007-2010

**American College of Surgeons Commission on Cancer**

Amy Chen, MD 2006-2010

**Archives of Otolaryngology Associate Editor**

Bevan Yueh, MD 2006-2010

**Archives of Otolaryngology News Editor**

Carol R. Bradford, MD 2007-2010

**American Joint Committee on Cancer**

Carol R. Bradford, MD 2006-2010

**AAO-HNSF Legislative Liaison**

Bruce J. Davidson, MD 2006-2012

**AAO-HNSF Board of Governors**

Theodorus Teknos, MD 2009-2012

**AAO-HNSF PR Liaison**

Peter Andersen, PhD 2007-2010

**Past Presidents**

**The American Head and Neck Society**

K. Thomas Robbins, MD 1999  
Ashok R. Shaha, MD 1999  
Jesus E. Medina, MD 2000  
Ernest A. Weymüller, Jr., MD 2001  
Keith S. Heller, MD 2002  
Paul A. Levine, MD 2003

**The American Society for Head and Neck Surgery**

John J. Conley, MD* 1959-61  
Paul H. Holinger, MD* 1961-63  
John F. Daly, MD* 1966-68  
W. Franklin Keim, MD* 1967-69  
George A. Sisson, MD* 1969-70  
John S. Lewis, MD* 1970-71  
Burton J. Soboroff, MD* 1971-72  
Charles M. Norris, MD* 1973-74  
Daniel Miller, MD* 1974-75  
Emanuel M. Skolnick, MD* 1975-76  
George F. Reed, MD* 1976-77  
John A. Kirchner, MD 1977-78  
William M. Trible, MD* 1978-79  
Loring W. Pratt, MD 1979-80  
J. Ryan Chandler, MD* 1980-81  
Douglas B. Bryce, MD* 1981-82  
Jerome C. Goldstein, MD 1982-83  
Paul H. Ward, MD 1983-84  
Hugh F. Biller, MD 1984-85  
Robert W. Cantrell, MD 1985-86  
Jean M. Lore, Jr., MD* 1986-87  
Burton J. Soboroff, MD* 1971-72  
Charles J. Krause, MD 1987-88  
Eugene N. Myers, MD 1988-89  
Willard N. Fee, Jr., MD 1989-90  
Helmuth Goepfert, MD 1990-91  
Charles W. Cummings, MD 1994-95  
Dale H. Rice, MD 1997-98

**The Society of Head and Neck Surgeons**

Hayes Martin, MD* 1954  
Hayes Martin, MD* 1955  
Hayes Martin, MD* 1956  
Grant Ward, MD* 1957  
Richard H. Jesse, MD* 1975  
Condict Moore, MD 1976  
Donald P. Shedd, MD 1977  
William A. Maddox, MD 1978  
John C. Gaisford, MD 1979  
Robert G. Chambers, MD* 1980  
Elliot W. Strong, MD 1981  
Alvin L. Watne, MD 1983  
Darrell A. Jaques, MD 1984  
Alando J. Ballantyne, MD* 1985  
Frank C. Marchetta, MD* 1986  
William R. Nelson, MD 1987  
Robert D. Harwick, MD 1988  
Jatin P. Shah, MD 1991  
Oscar Guillamondegui, MD 1992  
J. Edward M. Young, MD 1994  
Michael B. Flynn, MD 1995  
Randal S. Weber, MD 1997  
John J. Coleman, III, MD 2006

*Deceased
AHNS Past Lectures & Awards

Past Hayes Martin Lecturers

<table>
<thead>
<tr>
<th>Lecturer</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>William S. MacComb, MD</td>
<td>1972</td>
</tr>
<tr>
<td>Oliver H. Beahrs, MD</td>
<td>1973</td>
</tr>
<tr>
<td>Arthur G. James, MD</td>
<td>1974</td>
</tr>
<tr>
<td>Charles C. Harrold, MD</td>
<td>1975</td>
</tr>
<tr>
<td>Edgar L. Frazell, MD</td>
<td>1976</td>
</tr>
<tr>
<td>Harry W. Southwick, MD</td>
<td>1977</td>
</tr>
<tr>
<td>Harvey W. Baker, MD</td>
<td>1978</td>
</tr>
<tr>
<td>Edward F. Scanlon, MD</td>
<td>1979</td>
</tr>
<tr>
<td>Condict Moore, MD</td>
<td>1980</td>
</tr>
<tr>
<td>Richard H. Jesse, MD</td>
<td>1981</td>
</tr>
<tr>
<td>Milton Edgerton, MD</td>
<td>1982</td>
</tr>
<tr>
<td>John J. Conley, MD</td>
<td>1983</td>
</tr>
<tr>
<td>William A. Maddox, MD</td>
<td>1984</td>
</tr>
<tr>
<td>Alfred S. Ketcham, MD</td>
<td>1985</td>
</tr>
<tr>
<td>Donald P. Shedd, MD</td>
<td>1986</td>
</tr>
<tr>
<td>Elliot W. Strong, MD</td>
<td>1987</td>
</tr>
<tr>
<td>M.J. Jurkiewicz, MD</td>
<td>1988</td>
</tr>
<tr>
<td>George A. Sisson, MD</td>
<td>1989</td>
</tr>
<tr>
<td>Alando J. Ballantyne, MD</td>
<td>1990</td>
</tr>
<tr>
<td>Ian Thomas Jackson, MD</td>
<td>1991</td>
</tr>
<tr>
<td>John M. Lore, MD</td>
<td>1992</td>
</tr>
<tr>
<td>Ronald H. Spiro, MD</td>
<td>1993</td>
</tr>
<tr>
<td>John G. Batsakis, MD</td>
<td>1994</td>
</tr>
<tr>
<td>Helmuth Goepfert, MD</td>
<td>1995</td>
</tr>
<tr>
<td>Joseph N. Attie, MD</td>
<td>1996</td>
</tr>
<tr>
<td>Blake Cady, MD</td>
<td>1997</td>
</tr>
<tr>
<td>Jatin P. Shah, MD</td>
<td>1998</td>
</tr>
<tr>
<td>Jean-Louis H. LeFebvre, MD</td>
<td>1999</td>
</tr>
<tr>
<td>Robert M. Byers, MD</td>
<td>2000</td>
</tr>
<tr>
<td>William Wei, MS</td>
<td>2001</td>
</tr>
<tr>
<td>Eugene Myers, MD</td>
<td>2002</td>
</tr>
<tr>
<td>Michael Johns, MD</td>
<td>2003</td>
</tr>
<tr>
<td>Christopher J. O'Brien, MD</td>
<td>2004</td>
</tr>
<tr>
<td>Richard K. Reznick, MD, MEd</td>
<td>2005</td>
</tr>
<tr>
<td>Keith S. Heller, MD</td>
<td>2006</td>
</tr>
<tr>
<td>Jesus E. Medina, MD, FACS</td>
<td>2007</td>
</tr>
<tr>
<td>Waun Ki Hong, MD</td>
<td>2008</td>
</tr>
<tr>
<td>Charles W. Cummings, MD</td>
<td>2009</td>
</tr>
</tbody>
</table>

Past John J. Conley Lecturers

<table>
<thead>
<tr>
<th>Lecturer</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Edward Hughes, MD</td>
<td>2001</td>
</tr>
<tr>
<td>Rabbi David Saperstein</td>
<td>2002</td>
</tr>
<tr>
<td>Jonathan D. Moreno, MD</td>
<td>2003</td>
</tr>
<tr>
<td>David C. Leach, MD</td>
<td>2004</td>
</tr>
<tr>
<td>James F. Battey Jr., MD</td>
<td>2005</td>
</tr>
<tr>
<td>John Stone, MD, MACP</td>
<td>2006</td>
</tr>
<tr>
<td>Kenneth I. Shine, MD</td>
<td>2007</td>
</tr>
<tr>
<td>Carolyn Dresler, MD</td>
<td>2008</td>
</tr>
<tr>
<td>James D. Smith, MD</td>
<td>2009</td>
</tr>
</tbody>
</table>

Distinguished Service Awards

<table>
<thead>
<tr>
<th>Lecturer</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jatin P. Shah, MD</td>
<td>1989</td>
</tr>
<tr>
<td>Stephan Ariyan, MD</td>
<td>1990</td>
</tr>
<tr>
<td>Ashok R. Shaha, MD</td>
<td>1991</td>
</tr>
<tr>
<td>Elliot W. Strong, MD</td>
<td>1995</td>
</tr>
<tr>
<td>John J. Coleman, III MD</td>
<td>1999</td>
</tr>
<tr>
<td>David L. Larson, MD</td>
<td>1999</td>
</tr>
<tr>
<td>Harold J. Wanebo, MD</td>
<td>1999</td>
</tr>
<tr>
<td>Jonas T. Johnson, MD</td>
<td>2001</td>
</tr>
<tr>
<td>Helmuth Goepfert, MD</td>
<td>2003</td>
</tr>
<tr>
<td>Marc D. Coltrera, MD</td>
<td>2004</td>
</tr>
<tr>
<td>Wayne Koch, MD</td>
<td>2005</td>
</tr>
<tr>
<td>John A. Ridge, MD, PhD</td>
<td>2006</td>
</tr>
<tr>
<td>Ernest A. Weymuller, Jr., MD</td>
<td>2007</td>
</tr>
<tr>
<td>Helmuth Goepfert, MD</td>
<td>2008</td>
</tr>
<tr>
<td>Keith S. Heller, MD</td>
<td>2009</td>
</tr>
</tbody>
</table>

Special Recognition Awards

<table>
<thead>
<tr>
<th>Lecturer</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paul B. Chyetien, MD</td>
<td>1984</td>
</tr>
<tr>
<td>John M. Lore, Jr., MD</td>
<td>1985</td>
</tr>
<tr>
<td>William S. MacComb, MD</td>
<td>1986</td>
</tr>
<tr>
<td>Calvin T. Klopp, MD</td>
<td>1987</td>
</tr>
<tr>
<td>Edgar L. Fazell, MD</td>
<td>1988</td>
</tr>
<tr>
<td>Harvey W. Baker, MD</td>
<td>1989</td>
</tr>
<tr>
<td>Vahram Y. Bakamjijian, MD</td>
<td>1991</td>
</tr>
<tr>
<td>Jean-Louis Lefebvre, MD</td>
<td>1995</td>
</tr>
</tbody>
</table>
Alando J. Ballantyne, MD

Alando J. Ballantyne, M.D., a giving teacher, dedicated surgeon, and a devoted husband and father, is memorialized by the Alando J. Ballantyne Resident Research Pilot Grant.

This award, in the amount of $10,000, is for the best grant application by a resident.

Alando, known simply as Jay, grew up in a loving Mormon home that taught him the values of family, excellence, integrity and hard work. Jay graduated Phi Beta Kappa from the University of Arizona and was then awarded a scholarship to Columbia Medical School. During World War II, Jay served as an army captain and medical doctor and had the good fortune to meet his wife, Maria, in San Antonio. In 1947, Dr. Ballantyne became the first resident at the new M.D. Anderson Hospital in Houston. After his year-long residency, he went for further training at the Mayo Clinic in Rochester, Minnesota. He returned to the Anderson staff in 1952, where he quickly advanced from Assistant Surgeon in the Head and Neck Service to Associate Surgeon, and then from 1974 until his retirement in 1994, held the title of Surgeon and Professor of Surgery in the Department of Head and Neck Surgery as well as the title of Ashbel Smith Professor.

Dr. Ballantyne is credited as the first surgeon in the United States to pioneer modified radical neck dissection. His contributions to his subspecialty, the result of an undying curiosity and uncanny powers of observations, have been published in numerous scientific papers and book chapters. Jay lectured at local, national, and international forums and loved his travels. He held memberships in many distinguished medical and surgical societies and served as President and Hayes Martin Lecturer of the Society of Head and Neck Surgeons and President of the Texas Surgical Society.

To honor the contributions of this world-renowned surgeon, the Cynthia and George Mitchell Foundation established the Alando J. Ballantyne Distinguished Chair in Head and Neck Surgery at the University of Texas M.D. Anderson Cancer Center.

Dr. Ballantyne’s contributions to the subspecialty of Head and Neck cancer surgery have been the result of an undying curiosity and uncanny powers of observation. He was the father of conservative surgery, removing the cancer while preserving the function. He had a relentless desire to eradicate his patients’ disease, yet was able to balance this fervor with a desire to maintain quality of life for all his patients.

Always an advocate of reconstruction and preservation of cosmesis as well as function, those fortunate enough to have worked with him and been taught by him are forever indebted to his wisdom, surgical expertise, and devotion to his patients. He was beloved by his patients, admired by his peers and idolized by his family.

The Alando J. Ballantyne Resident Research Pilot Grant is funded by the generous contributions of members of the Ballantyne family, including Dr. Gilchrist L. Jackson, a respected member of the American Head and Neck Society.

Robert Maxwell Byers

The Robert Maxwell Byers Award, in the amount of $1000, is for the best clinical or basic science research paper submitted for presentation at the annual meeting of the American Head and Neck Society.

Robert Maxwell Byers, M.D. was born in Union Hospital, Baltimore, Maryland on September 24, 1937. He grew up on the Eastern Shore of Maryland in the small town of Elkton. Very active in the varsity sports of baseball, basketball and track during his high school years, he continued his athletic participation at Duke University along with his pre-med studies. He entered the University of Maryland Medical School in Baltimore in 1959. where he excelled in his medical studies and received membership in AOA and the Rush Honor Medical Society. The highlight of his sophomore year was his 1961 marriage to Marcia Davis, a high school sweetheart. During his junior year, he was commissioned an Ensign in the United States Naval Reserve and later rose to the rank of Captain in 1986.

In 1963, Dr. Byers begin his general surgical residency with Dr. Robert Buxton at the University Hospital in Baltimore. Five years later, as a fully trained general surgeon, he went to the Republic of Vietnam with the 1st Marine Division where he received a unit commendation medal and a combat action ribbon. On return to the United States, he spent a year at Quonset Point, Rhode Island Naval Hospital as Chief of Surgery. In 1969, he was certified by the American Board of Surgery. After discharge from the Navy in 1970, Dr. Byers and his family moved to Houston, Texas where he began a fellowship in Surgical Oncology at the University of Texas M.D. Anderson Cancer Center under the guidance of Drs. R. Lee Clark, Richard Martin, Ed White, William MacComb, Richard Jesse and Alando J. Ballantyne. This move proved to be a decisive event, as he never left. His career in Head and Neck Surgical Oncology was born, nurtured, and matured during the 31 years of his academic/clinical practice at the University of Texas M.D. Anderson Cancer Center.

During his tenure at M.D. Anderson Cancer Center he rose through the ranks from Assistant Professor in 1972 to Associate Professor in 1976 and, finally, Professor and Surgeon in 1981.

In 1998, he was honored with the Distinguished Alando J. Ballantyne Chair of Head and Neck Surgery. He is the author or co-author of over 200 published papers, book chapter and monographs. He has given invited lectures all over the world. Most recently (1999), he was selected to give the Hayes Martin Memorial Lecture at the 5th International Conference on Head and Neck Cancer. He has been President of the American Radium Society and President of the Society of Head and Neck Surgeons both in 1995 – 1996. His research interests and his expertise have been focused on cancer of the oral cavity, head and neck cancer in young people and treatment of the neck involved with metastatic cancer with a particular interest in various neck dissections. Dr. Byers is a member of many prestigious societies, of which the Southern Surgical Association, the Texas Surgical Society, the American College of Surgeons and the Society of Surgical Oncologists are but a few. He is a peer reviewer for many medical journals and on the Editorial Board of three. During his 31 years at the University of Texas M.D. Anderson Cancer Center, he has participated in the surgical education of over 300 residents and fellows, many of who have gone on to become prominent members of the specialty. The youth community of Houston has benefited from his coaching expertise in baseball and basketball while he has indulged in the hobbies of hunting, travel, and collecting toy soldiers.

www.ahns.info
Christopher O’Brien, MD

The American Head and Neck Society is mourning the loss of one of our members and a great leader in our discipline, Professor Chris O’Brien AM. Professor O’Brien was diagnosed with glioblastoma multiforme in 2006 and although his initial treatment was successful, after a valiant and courageous battle, he passed away on June 4, 2009.

Professor O’Brien led a life unparalleled by many. He graduated in medicine from the University of Sydney in 1976 and then completed his residency and surgical training at Royal Prince Alfred Hospital. He decided to specialize in head and neck surgery and undertook clinical fellowships in head and neck surgery and oncology at the Royal Marsden Hospital, in England and at the University of Alabama, USA, returning to Australia in 1987 to join the staff of RPAH as a consultant head and neck surgeon. There he contributed to the expansion of the clinical service, making it one of the largest in the country, and also established a comprehensive head and neck database. That database is the largest in Australasia and one of the largest in the world.

He also established a basic research program and an international clinical fellowship program under the umbrella of the Sydney Head and Neck Cancer Institute, which he founded in 2002.

Professor O’Brien has two postgraduate degrees from the University of Sydney – a Masters of Surgery for his basic research in microvascular surgery and a Doctorate in Medicine for his work on the management of metastatic cancer in the neck.

He is the author of over one hundred scientific papers and 17 book chapters and he has been honoured with invitations to many countries and institutions as a visiting professor and guest lecturer, including invitations to give numerous prestigious named lectures: the Hayes Martin Lecture in Washington in 2004, the Eugene Myers International Lecture in Los Angeles 2005, the inaugural Jatin P. Shah Lecture in Prague 2006 and the Semon Lecture in London 2008. He was also made an Honorary Fellow of the Royal College of Surgeons in England in recognition of his contribution to the training of young British surgeons. His published works contributed significantly to our understanding of the patterns of metastatic spread of cutaneous malignancies and their management.

In 1998, Professor O’Brien founded the Australian and New Zealand Head and Neck Society, a multidisciplinary society comprising of surgeons of all disciplines, radiation and medical oncologists and allied health professionals. He was President in 2004. He served on Council of the AHNS from 2005-2008. He was a founding member of the International Federation of Head and Neck Oncologic Societies, and served on its council throughout his active career.

In 2003 Professor O’Brien became Director of the Sydney Cancer Centre, based at Royal Prince Alfred Hospital and the University of Sydney, while maintaining all of his clinical, teaching and research responsibilities. He has developed a proposal to transform the Sydney Cancer Centre into a $250 million world-class comprehensive cancer centre, supported by the Government and philanthropic funds raised by him. This dedicated Head and Neck Cancer centre will be called, “Life House – The Chris O’Brien Cancer Centre”. This project is moving forward with great momentum and is scheduled to open in 2012.

Professor O’Brien is widely known to the people of Australia for his many appearances over the last 12 years on the award winning reality TV program RPA. He was made a Member the Order of Australia (AM) for his services to medicine, on Australia Day in 2005. He was to receive the highest civilian Honor, AO, (Officer of the Order of Australia), from the Prime Minister of Australia, on the Queen’s Birth Day celebrations, in the first week of June, but unfortunately, he passed away, only hours before the ceremony. This Honor was bestowed upon him posthumously, and was received by Mrs. Gail O’Brien.

His book entitled Never Say Die depicted his personal battle with cancer and also served as an inspiration to those suffering from all forms of cancer.

In 2008, AHNS established the Professor Chris O’Brien Fund, which in part, sponsors the AHNS/ANZHNS Chris O’Brien Travelling Fellowship Award, an award to encourage international exchange of information concerning surgical science, practice, and education and to establish professional and academic collaborations and friendships. The first recipient of this award is Professor Carsten Palme. The International Federation of Head and Neck Oncologic Societies has established “The Chris O’Brien Symposium” at it’s quadrennial congresses, the first of which will be presented, this year in Seoul, Korea, during the 4th World Congress of IFHNOS.

If you would like to make a donation to the AHNS Chris O’Brien Fund, please go to http://www.ahns.info/foundation/pledge.php. Professor O’Brien, fondly called by his family and friends “Dr. Gorgeous” is survived by his wonderful wife, Gail, and their three children, Adam, Juliette and James, who dearly loved him.
The Research and Education Foundation of the American Head and Neck Society gratefully acknowledges those who have completed or are working on pledges to the Foundation:

**The Foundation is grateful to Jatin P. Shah for his generous $100,000 pledge commitment.**

**Patrons**
- John J. Coleman
- Ellie Maghami

**Sponsors**
- Rui Fernandes
- Jonas T. Johnson

**Supporters**
- Stephen Bayles
- Carol Bradford
- Robert Byers
- Joseph Califano
- Marion Couch
- Charles Cummings
- Terry Day
- David Eisele
- Christine Gourin
- Patrick Gullane
- Gady Har-El*
- Keith Heller
- Wanye Koch
- William Lydiatt
- Eugene Myers
- Jeffrey Myers
- Andrew Nemechek
- John O’Brien, Jr.
- Daniel Pinheiro
- Karen Pitman
- John Ridge
- Thomas Robbins
- Richard Smith
- James Suen
- Mark Varvares
- Maritime Wang
- Mark Wax
- Randal Weber
- Barry Wenig
- Ernest Weymuller
- Gregory Wolf
- Bevan Yueh

*Completed one pledge commitment and has initiated new pledge

The Research and Education Foundation of the American Head and Neck Society gratefully acknowledges our supporter who gave $250 or more January 1, 2009 through March 5, 2010:

- Carol Bradford
- John Brockenbrough
- Bruce Campbell
- Chin-Yen Chien
- Daniel Deschler
- Robert Ferris
- John Hardin
- Dennis Kraus
- Payal Lakhani
- Cherie-Ann Nathan
- Peter Neligan
- Liana Puscas
- Jan Rider
- James Rocco
- Ruth Schleeweis

The Foundation extends a special thank you to the Australia/New Zealand Head and Neck Society for their generous contribution in support of the Chris O’Brien Fund.

Additional Chris O’Brien Fund supporters include:

- Lysiane Adolphe
- Patrick Bradley
- Dale Brown
- Robert Byers
- Claudio Cernea
- Fernando Dias
- Jeremy Freeman
- Margaret Gidley-Baird
- Ralph Gilbert
- Patrick Gullane
- Ehab Hanna
- Keith Heller
- Jonas Johnson
- Catherine Kelly
- Suren Krishnan
- Pierre Lavertu
- Jesus Medina
- Eugene Myers
- Peter Neligan
- Brian Nussenbaum
- Gail O’Brien
- John O’Brien
- Lester Peters
- Peter Rhys-Evans
- John Ridge
- Lorne Rotstein
- John Saunders
- Jatin Shah
- Ashok Shaha
- Khee-Chee Soo
- Ralph Tufano
- Mark Urken
- Michael Van den Brekel
- Vincent Vander Poorten
- John Watkinson
- Randal Weber
- William Wei
- Ernest Weymuller
- N. Zanardo

*Don’t see you name on the list? Pick up a donation form at the AHNS Desk or go on-line to www.ahns.info/foundation to make your donation.

If you have contributed to the Foundation, stop by the AHNS desk to pick-up a special Donor ribbon.*
AHNS Accreditation

The American Head & Neck Society (AHNS) is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to sponsor Continuing Medical Education for physicians. The AHNS designates this activity for a maximum of 14.5 AMA PRA Category 1 Credit(s)™. Physicians should only claim credit commensurate with the extent of their participation in the activity.

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. After the meeting, an email will be sent to attendees with an on-line link to the survey and claim form.

**WEDNESDAY, APRIL 28, 2010**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Credits Available</th>
<th>Hours Attended</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 AM - 8:15 AM</td>
<td>Welcome and Introduction of Guest of Honor</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>8:15 AM - 9:00 AM</td>
<td>Plenary Session #1: Clinical</td>
<td>.75</td>
<td></td>
</tr>
<tr>
<td>9:00 AM - 9:45 AM</td>
<td>John J. Conley Lecture: &quot;Cancer Clinical Trials - The Engine for Progress&quot;</td>
<td>.75</td>
<td></td>
</tr>
<tr>
<td>9:45 AM - 10:00 AM</td>
<td>Clinical Poster Discussion</td>
<td>.25</td>
<td></td>
</tr>
<tr>
<td>10:00 AM - 10:20 AM</td>
<td>Morning Break</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>10:20 AM - 11:15 AM</td>
<td>Scientific Session #1</td>
<td>.75</td>
<td></td>
</tr>
<tr>
<td>11:15 AM - 12:00 PM</td>
<td>Panel: Optimal Adjuvant Treatment For High-Risk Oral Cancer</td>
<td>.75</td>
<td></td>
</tr>
<tr>
<td>12:00 PM - 1:00 PM</td>
<td>Lunch on Own OR AHNS Business Meeting for Members</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1:00 PM - 2:00 PM</td>
<td>Scientific Session #2</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2:00 PM - 3:00 PM</td>
<td>Jatin P. Shah Symposium on Clinical Controversies in Head and Neck Surgery: &quot;Update of Clinical Trials in Head &amp; Neck Oncology&quot;</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>3:00 PM - 3:20 PM</td>
<td>Afternoon Break</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>3:20 PM - 3:55 PM</td>
<td>Scientific Session #3 - Reconstruction</td>
<td>.5</td>
<td></td>
</tr>
<tr>
<td>3:55 PM - 4:30 PM</td>
<td>Panel: New Horizons in Head and Neck Reconstruction</td>
<td>.75</td>
<td></td>
</tr>
<tr>
<td>4:30 PM - 5:30 PM</td>
<td>Scientific Session #4</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits Available for Wednesday, April 28, 2010: 7.5

**THURSDAY, APRIL 29, 2010**

<table>
<thead>
<tr>
<th>Time</th>
<th>Activity</th>
<th>Credits Available</th>
<th>Hours Attended</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 AM - 8:45 AM</td>
<td>Plenary Session #2: Basic Science</td>
<td>.75</td>
<td></td>
</tr>
<tr>
<td>8:45 AM - 9:00 AM</td>
<td>Basic Science Poster Discussion</td>
<td>.25</td>
<td></td>
</tr>
<tr>
<td>9:00 AM - 9:45 AM</td>
<td>Hayes Martin Lecture: &quot;Pathogenetic Stratification of Salivary Gland Malignancies: Promise and Potential&quot;</td>
<td>.75</td>
<td></td>
</tr>
<tr>
<td>9:45 AM - 10:00 AM</td>
<td>AHNS Awards Ceremony</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>10:00 AM - 10:20 AM</td>
<td>Morning Break with Exhibitors</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>10:20 AM - 10:25 AM</td>
<td>Introduction of the AHNS President</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>10:25 AM - 11:00 AM</td>
<td>AHNS Presidential Address and Presidential Citations</td>
<td>.5</td>
<td></td>
</tr>
<tr>
<td>11:00 AM - 12:00 PM</td>
<td>Scientific Session #5</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>12:00 PM - 1:00 PM</td>
<td>Lunch with Exhibitors</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1:00 PM - 2:00 PM</td>
<td>Scientific Session #6</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2:00 PM - 3:10 PM</td>
<td>Panel: Role of Surgery in Laboratory Thyroid Cancer - Supported by Clinical Data?</td>
<td>1.25</td>
<td></td>
</tr>
<tr>
<td>3:10 PM - 3:30 PM</td>
<td>Afternoon Break with Exhibitors</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>3:30 PM - 4:00 PM</td>
<td>NCCN Guidelines Discussion</td>
<td>.5</td>
<td></td>
</tr>
<tr>
<td>4:00 PM - 5:00 PM</td>
<td>Scientific Session #7</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>5:00 PM - 5:45 PM</td>
<td>Fellowship Information Session</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>5:30 PM - 7:00 PM</td>
<td>PRESIDENT’S POSTER DISCUSSION SESSION</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>7:15 PM - 8:30 PM</td>
<td>AHNS PRESIDENT’S RECEPTION</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

Total Credits Available for Thursday, April 29, 2010: 7

TOTAL CREDITS 14.5

To receive your CME credit: AHNS has instituted a new process for claiming CME credits and printing certificates. All attendees wishing to receive a CME certificate for activities attended at the AHNS 2010 Annual Meeting must first complete an on-line meeting evaluation form. Attendees will have access to the on-line meeting evaluation and credit claim form via a link on the AHNS website after the meeting. Please allow 4-6 weeks for processing before your certificate is mailed to you.
Commercial Bias Reporting Form

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.)

<table>
<thead>
<tr>
<th>Presentation: (eg session name, etc)</th>
<th>Commercial Bias by: (ie faculty name, company rep)</th>
<th>Promotion via: (eg handouts, slides, what they said, actions)</th>
</tr>
</thead>
</table>

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

Please return this form to the AHNS Desk or mail it to:
AHNS CME, 11300 W. Olympic Blvd, Suite 600, Los Angeles, CA 90064
**Welcome and Introduction of Guest of Honor**

**John A. Ridge, MD, PhD, AHNS President and Bhuvanesh Singh, MD, PhD, AHNS Program Chair**

**Guest of Honor: Andy Trotti, MD**

---

**PLENARY SESSION #1: CLINICAL**

**Moderators:** Jeffrey Scott Magnuson, MD, Andy Trotti, MD and Bevan Yueh, MD

**8:15 AM**

**S001: QUALITY AND PERFORMANCE INDICATORS FOR AN ACADEMIC HEAD AND NECK SURGICAL ONCOLOGY DEPARTMENT.** Randal S Weber, MD, Scott Eastman, MBA, Ehab Y Hanna, MD, Olubumi Akiwumi, MS, Amy Hessel, MD, Stephen Y Lai, MD PhD, Leslie Kian, MBA, Michael Kupferman, MD, Dianna Roberts, PhD; Department of Head and Neck Surgery, University of Texas MD Anderson Cancer Center, Houston, Texas. 

**Discussant:** Bevan Yueh, MD

**8:35 AM**

**S002: TRANSORAL ROBOTIC SURGERY (TORS): A MULTICENTER STUDY TO ASSESS SAFETY, FEASIBILITY AND EFFICACY.** Gregory S Weinstein MD FACS, Professor and Vice Chairman, J. Scott Magnuson MD FACS, Associate Professor of Surgery, Eric J Moore MD FACS, Associate Professor, William R Carrol MD FACS, Professor, Kerry D, Olsen MD FACS, Bert O’Malley, Professor and Chairman, F. Christopher Holsinger, Associate Professor, F. Christopher Holsinger, Associate Professor; Department of Otorhinolaryngology: Head and Neck Surgery, The University of Pennsylvania; Department of Otorhinolaryngology, Mayo Clinic, Minnesota; Department of Head and Neck Surgery, The University of Texas MD Anderson Cancer Center, Houston. 

**Discussant:** Jeffery Scott Magnuson, MD

**8:55 AM**

**S003: EVALUATION OF GRADE 3/4 MUCOSITIS AND DYSPHAGIA FOR THREE DIFFERENT RADIOTHERAPY REGIMENS, WITH AND WITHOUT CETUXIMAB, IN LOCOREGIONALLY ADVANCED HEAD AND NECK CANCER.** J A Bonner, MD, P M Harari, MD, J Giralt, MD, H Youssoufian, MD, J Zhu, PhD, K K Ang, MD; The University of Alabama at Birmingham, Birmingham, AL, USA; University of Wisconsin, Madison, WI, USA; Vall d’Hebron University Hospital, Barcelona, Spain; ImClone Systems Corporation, Branchburg, NJ, USA.

**Discussant:** Andy Trotti, MD

---

**JOHN J. CONLEY LECTURE**

“Cancer Clinical Trials - The Engine for Progress”

**Introduction by John A. Ridge, MD, PhD**

**Robert L. Comis, MD, Professor of Medicine and Director, Drexel University Clinical Trials Research Center, Philadelphia, PA**

AHNS acknowledges generous educational grants from

BRISTOL-MYSER SQUIBB

ETHICON ENDO-SURGERY, INC.

---

**CLINICAL POSTER DISCUSSION**

**Moderator:** Gady Har-El, MD

---

**Morning Break**
SCIENTIFIC SESSION #1

Moderators: Elizabeth A. Blair, MD, Snehal Patel, MD and Erich M. Sturgis, MD

10:00 AM  S004: FIRST REPORT OF VALIDATION OF THE SYDNEY SWALLOW QUESTIONNAIRE (SSQ) IN A HEAD AND NECK CANCER POPULATION. Raghav Dwivedi, MRCS DOHNS MS, Suzanne St. Rose, PhD, Afroze S Khan, MRCS, Christopher Pepper, MRCS DOHNS, Christopher M Nutting, MD FRCR, Peter M Clarke, FRCS, Cyrus J Kerawala, FRCS FDSRCS, Peter H Rhys-Evans, FRCS, Kevin J Harrington, FRCR PhD, Rehan Kazi, MS FRCS PhD; Head and Neck Unit, Royal Marsden Hospital, Fulham Road, London, SW3 6JJ, UK and The Institute of Cancer Research, 123 Old Brompton Road, London SW7 3RP, UK.

10:08 AM  S005: HEAD AND NECK CANCER PATIENTS REFERRED TO A TERTIARY CENTER AFTER PRIOR TREATMENT: COMPLIANCE WITH OR DEVIATION FROM NATIONAL COMPREHENSIVE CANCER NETWORK TREATMENT GUIDELINES. Carol M Lewis, MD MPH, Amy C Hessel, MD, Dianna B Roberts, PhD, Yunxia Z Guo, BSE, F Christopher Holsinger, MD, Lawrence E Ginsberg, MD, Adel K El-Naggar, MD, Randal S Weber, MD; UT MD Anderson Cancer Center.

10:16 AM  S006: DISPARITIES IN HEAD AND NECK CANCER TREATMENT BASED ON AGE. Alexander Langerman, MD, Lauren Hensley, BA, Kerstin M Stenson, MD, Ezra E W Cohen, MD, Elizabeth A Blair, MD; The University of Chicago Medical Center.

10:24 AM  Discussion – 6 minutes

10:30 AM  S007: SALVAGE SURGERY AFTER ORGAN PRESERVATION REGIMENS. Rachel M Brock, MD, Nathan Hales, MD, Greg Krempl, MD, Jesus E Medina, MD; Oklahoma University Health Sciences Center, Department of Otorhinolaryngology.

10:38 AM  S008: IMPACT OF TIME INTERVAL FROM BIOPSY TO START OF TREATMENT. Gregory J Kubicek, MD, Seungwon W Kim, MD, Umanmaheswar Duvvuri, MD, Robert Ferris, MD, Jonas Johnson, MD, Dwight E Heron, MD FACRO; University of Pittsburgh Medical Center.

10:46 AM  S009: MANAGEMENT OF EARLY T-STAGE TONSILLAR CARCINOMAS - RETROSPECTIVE COMPARISON OF RADICAL TONSILLECTOMY VERSUS RADIATION FROM A SINGLE INSTITUTION. Eric D Lamarre, MD, Rahul Seth, MD, Robert R Lorenz, MD, Ramon Esclamado, MD, David J Adelstein, MD, Christina P Rodriguez, MD, Jerrold Saxton, MD, Joseph Scharpf, MD; Cleveland Clinic.

10:54 AM  Discussion – 6 minutes

11:15 AM - 12:00 PM  PANEL: OPTIMAL ADJUVANT TREATMENT FOR HIGH-RISK ORAL CANCER

Panel Moderator: Bhuvanesh Singh, MD, PhD

Case-based discussion on use of chemo-radiation or an adjunct to surgery in patients with advanced oral cancer.

Panelists: Arlene A. Forastiere, MD, John A. Ridge, MD, PhD, Andy Trotti, MD and David G. Pfister, MD

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

- Determine who benefits from adjuvant chemo-radiation after surgery.
- Decide who should not receive chemo-radiation.
- Define need for future studies.
- Define need of new approaches.

12:00 PM - 1:00 PM  Lunch on Own
SCIENTIFIC SESSION #2

Moderators: Claudio R. Cernea, MD, David Kutler, MD and Kepal N. Patel, MD

1:00 PM  S010: POSTOPERATIVE RADIOTHERAPY IN MUCOSAL MELANOMA OF THE HEAD AND NECK. A FRENCH GETTEC MULTICENTRIC STUDY. Adil BENLYAZID, MD, Juliette Thariat, MD, Thomas Filleron, PhD; GETTEC.

1:08 PM  S011: COMPARTMENTAL SURGERY IN TONGUE TUMORS: LONG TERM ONCOLOGIC EVALUATION OF A NEW SURGICAL TECHNIQUE VS. CONVENTIONAL Demolitive TONGUE SURGERY. A FOURTEEN-YEAR CLINICAL EXPERIENCE. Luca Calabrese, MD, Gioacchino Giuliano, MD, Mohsen Ansarin, MD, Roberto Bruschini, MD, Angelo Ostuni, DDS MD, Valeria Navach, MD, Maria Angela Massaro, PhD, Lorenzo Preda, MD, Fausto Maffini, MD, Luigi Santoro, PhD, Daniela Alterio, MD, Fausto Chiesa, MD; European Institute of Oncology.

1:16 PM  S012: TPF INDUCTION THERAPY WITH RADIOIMMUNOCHEMOTHERAPY FOR THE TREATMENT OF HEAD & NECK CANCER. Wolf Oliver Jordan, Ingeborg Wildfang, Dr, Hans-Jürgen Welkoborsky, Prof, Jürgen Borghardt, Dr. Hayssam Zakaria, Dr, Sepideh Fanai, Dr, Heiko Niebuhr, Barbara Tschechne, Dr; Praxis Tschechne / Luft / Jordan, Onkologie, Lehrte, Germany; Gemeinschaftspraxis für Radioonkologie und Strahlentherapie, Hannover, Germany; AWO GSD, Onkologie, Bad Münster, Germany.

1:24 PM  Discussion – 6 minutes

1:30 PM  S013: TARGETING CK2 BY SMALL MOLECULE INHIBITOR DMAT MODULATES NF-KAPPA B AND TP53 SIGNALING, SURVIVAL AND MIGRATION IN HEAD AND NECK CANCER. Matthew S Brown, MD, Vishnu R Kannabiran, BS, Hai Lu, MD PhD, Zhong Chen, MD PhD, Carter Van Waes, MD PhD; Tumor Biology Section, Head and Neck Surgery Branch, NIDCD, NIH. 1. Clinical Research Training Program supported jointly by NIH and Pfizer, Inc.

1:38 PM  S014: MICRORNA-21 SPECIFIC TARGETS IN HEAD AND NECK SQUAMOUS CELL CARCINOMA. Wojciech K Mydlarz, MD, Patrick T Hennessey, MD, Semra Demokan, PhD, Steven Chang, MD, David Sidransky, MD, Joseph A Califano, MD; Department of Otolaryngology - Head and Neck Surgery, Johns Hopkins Medical Institutions, Baltimore, MD; Milton J. Dance Head and Neck Center, Greater Baltimore Medical Center, Baltimore, MD.

1:46 PM  S015: AKT PHOSPHORYLATION AS A MARKER OF RESISTANCE TO ZD6474 (VANDETANIB) IN HEAD AND NECK SQUAMOUS CELL CARCINOMA. Genevieve A Andrews, MD, Mitchell J Frederick, PhD, Mei Zhao, MD, David R Fooshee, Zvonimir L Milas, MD, Maria K Gule, MD, Chad E Galer, MD, Jeffrey N Myers, MD PhD; MD Anderson Cancer Center.

1:54 PM  Discussion – 6 minutes

JATIN P. SHAH SYMPOSIUM ON CLINICAL CONTROVERSIES IN HEAD AND NECK SURGERY

Panel Moderator: Gregory T. Wolf, MD

Update of RTOG 91-11  
Arlene A. Forastiere, MD and European Organ Preservation Trials  
Jan B. Vermorken, MD, PhD

The VA Larynx Trial - Revisited  
Gregory T. Wolf, MD

This session will provide expert opinion and interpretation of recent clinical trials in view of emerging biomarker data. At the conclusion of this session, participants will be able to:

• Discuss the relevant advances in treatment incorporating chemotherapy and radiation.
• Better understand the selection of patients for chemoradiation.

Afternoon Break

AHNS acknowledges our Gold Level Donor for their support of the Afternoon Break

STRYKER
SCIENTIFIC SESSION #3 - RECONSTRUCTION

3:20 PM

S016: A BLOOD TRANSFUSION PREDICTION MODEL IN PATIENTS UNDERGOING MAJOR HEAD & NECK SURGERY INVOLVING FREE FLAP RECONSTRUCTION. Manish D Shah, MD MPhil FRCSC, David P Goldstein, MD FRCSC, Stuart McClusky, MD FRCP, Patrick Gullane, MD FRCSC FACS FRACS Hon, Dale H Brown, MD FRCSC, Jonathan C Irish, MD MSc FRCSC FACS, Ralph W Gilbert, MD FRCSC; University Health Network, University of Toronto, Toronto, Canada.

3:28 PM

S017: A CLASSIFICATION SYSTEM FOR RECONSTRUCTION OF VERTICAL HEMIPHARYNGOLARYNGECTOMY FOR HYPOPHARYNGEAL SQUAMOUS CELL CARCINOMA. Min-Sik Kim, MD PhD, Young-Hoon Joo, MD, Dong-Hi Sun, MD PhD, Kwang-Jae Cho, MD PhD, Jun-Ook Park, MD; The Catholic University of Korea.

3:36 PM

S018: THE NATURE AND EXTENT OF BODY IMAGE CONCERNS AMONG SURGICALLY TREATED PATIENTS WITH HEAD AND NECK CANCER: NEW FINDINGS TO PROMOTE IMPROVED PSYCHOSOCIAL CARE. Michelle C Fingaret, PhD, Ying Yuan, MD, June Weston, Randal S Weber, MD; M. D. Anderson Cancer Center.

3:44 PM

S019: SUBMENTAL FLAP VERSUS RADIAL FOREARM FLAP FOR ORAL CAVITY RECONSTRUCTION: COMPARISON OF OUTCOMES. Joseph A Paydarfar, MD, Urijeet A Patel, MD; Dartmouth Hitchcock Medical Center, Lebanon, NH, USA; Northwestern University Medical Center, Chicago, IL, USA.

3:52 PM

Discussion – 3 minutes

3:55 PM - 4:30 PM

PANEL: NEW HORIZONS IN HEAD AND NECK RECONSTRUCTION

Panel Moderator: Joseph J. Disa, MD

Panelists: Matthew M. Hanasono, MD, Eben L. Rosenthal, MD and Mark K. Wax, MD

The panel will present a current controversy in head and neck reconstruction. A second member of the panel will then propose a clinical trial and lead a discussion addressing some of the complexities surrounding a trial.

At the conclusion of this session, participants will be able to:
• List basic options for reconstruction of lateral mandibular defects.
• Understand potential options to address reconstructive controversies using a clinical trial.
• Understand potential barriers to a clinical trial in head and neck reconstruction.

4:30 PM - 5:30 PM

SCIENTIFIC SESSION #4

Moderators: Sandeep Samant, MS, Richard V. Smith, MD and Richard J. Wong, MD

4:30 PM

S020: LOCAL RESPONSE TO CHEMORADIOThERAPY FOR T4 LARYNGEAL/HYPOPHARYNGEAL CARCINOMA WITH CARTILAGE INVASION. Urjeet A Patel, MD, Lori K Howell, MD; Northwestern University; University of Illinois at Chicago.

4:38 PM

S021: DETERMINANTS OF LONG-TERM SPEECH AND SWALLOWING OUTCOMES FOLLOWING CHEMORADIOThERAPY FOR LOCOREGIONALLY ADVANCED HEAD AND NECK CANCER. K W Mouw, PhD, D J Haraf, MD, K M Stenson, MD, E E Cohen, MD, E Blair, MD, M E Witt, RN MS, E E Vokes, MD, J K Salama, MD; The University of Chicago.

4:46 PM

S022: RESIDUAL DISEASE IN POST-CHEMORADIOThERAPY NECK DISSECTIONS FOR ADVANCED SQUAMOUS CELL CARCINOMA OF THE HEAD AND NECK: DOES IT AFFECT PROGNOSIS? Hillary White, MD, Jeffrey Magnuson, MD; University of Alabama at Birmingham.

4:54 PM

Discussion – 6 minutes

5:00 PM

S023: RETROSPECTIVE ANALYSIS OF MINOR SALIVARY GLAND CARCINOMAS OF THE OROPHARYNX AND FACTORS PREDICTIVE OF OUTCOME. N Gopalakrishna Iyer, MD PhD, Leslie Kim, BA, Iain J Nixon, MD, Frank Palmer, BA, Jatin P Shah, MD PhD, Snehall G Patel, MD, Ian Gally, MD PhD; Memorial Sloan-Kettering Cancer Center.

5:08 PM

S024: THE INCIDENCE AND OUTCOME OF HEAD AND NECK SQUAMOUS CELL CARCINOMA PATIENTS WITH SUSPICIOUS PULMONARY FINDINGS ON PET/CT. Steven Shinn, Bradley A Schiff, MD, Janine Feng, MD, Keivan Shifteh, MD, Missak Haigentz, MD, Madhur Garg, MD, Richard Smith, MD; Albert Einstein College of Medicine.

5:16 PM

S025: INDUCTION CHEMOTHERAPy FOR ADVANCED SQUAMOUS CELL CARCINOMA OF THE PARANASAL SINUSES. Ehab Y Hanna, MD, M Kupferman, MD, R Weber, MD, M Kies, MD; MD Anderson Cancer Center.

5:24 PM

Discussion – 6 minutes
PLENARY SESSION #2: BASIC SCIENCE

Moderators: Carol R. Bradford, MD, Joseph A. Califano, MD, Robert L. Ferris, MD, PhD and James Rocco, MD, PhD

8:00 AM

S026: CD40 IS REQUIRED FOR AN IMMUNE MEDIATED CLEARANCE OF HPV POSITIVE HEAD AND NECK CANCER. William C Spanos, MD, Denise Schwabauer, MS, Daniel W Vermeer, BA, Annie Herrig, BS, John H Lee, MD; Sanford Research/USD, Sioux Falls, SD, USA. Discussant: Robert L. Ferris, MD, PhD

8:11 AM

S027: VASCULAR ENDOTHELIAL GROWTH FACTOR C (VEGF-C) IS IMPORTANT IN THE DEVELOPMENT AND METASTASIS OF HEAD AND NECK SQUAMOUS CELL CARCINOMA. Rachel L Chard, BA, Hiroshi Yagi, MD PhD, Vyomesh Patel, PhD, Alfredo Molinolo, MD PhD, J. Silvio Gutkind, PhD; Oral and Pharyngeal Cancer Branch, National Institute of Dental and Craniofacial Research, National Institutes of Health, and Oregon Health & Science University School of Medicine. Discussant: Carol R. Bradford, MD

8:22 AM

S028: SIGNIFICANCE OF CIRCULATING TUMOR CELLS IN PATIENTS WITH SQUAMOUS CELL CARCINOMA OF THE HEAD AND NECK. Kris R Jatana, MD, Priya Balasubramanian, MS, Jas C Lang, PhD, Liying Yang, PhD, Courtney A Jatana, DDS, Elisabeth White, BA, David E Schuller, MD, Theodores N Teknos, MD, Amit Agrawal, MD, Enver Ozer, MD, Jeffrey J Chalmers, PhD; The Ohio State University, Arthur G. James Cancer Hospital and Solove Research Institute. Discussant: Joseph A. Califano, MD

8:33 AM

S029: ENHANCED INVASIVE AND METASTATIC POTENTIAL OF CANCER STEM CELLS IN HEAD AND NECK SQUAMOUS CELL CARCINOMA. Samantha J Davis, BS, Vasu Divi, MD, John H Owen, BA, Silvana Papagerakis, MD PhD, Carol R Bradford, MD, Thomas E Carey, PhD, Mark E Prince, MD; Department of Otorhinolaryngology, University of Michigan, Ann Arbor, MI; Massachusetts Eye and Ear Infirmary/Harvard Medical School, Boston, MA. Discussant: James Rocco, MD, PhD

8:45 AM - 9:00 AM

BASIC SCIENCE POSTER DISCUSSION

Moderators: Stephen Y. Lai, MD, PhD

9:00 AM - 9:45 AM

HAYES MARTIN LECTURE

“Pathogenetic Stratification of Salivary Gland Malignancies: Promise and Potential”

Introduction by John A. Ridge, MD, PhD

Adel El-Naggar, MD, PhD, Professor of Pathology and Head and Neck Surgery, The University of Texas M.D. Anderson Cancer Center, Texas; Editor-in-Chief, Head and Neck Oncology

AHNS acknowledges generous educational grants from STRYKER

9:45 AM - 10:00 AM

AHNS AWARDS CEREMONY

Presented by: Cherie-Ann O. Nathan, MD and Marilene B. Wang, MD

- AHNS Alando J. Ballantyne Resident Research Pilot Grant
- AHNS Pilot Research Grant
- AHNS/AAO-HNS Young Investigator Awards
- AHNS/AAO-HNS Surgeon Scientist Career Development Award
- Robert Maxwell Byers Award
- Best Resident Basic Science Research Paper
- Best Resident Clinical Paper
- Best Prevention and Early Detection Papers

10:00 AM - 10:20 AM

Morning Break with Exhibitors
科学会议

10:00 AM - 10:25 AM 介绍 AHNS 会长

介绍由 David W. Eisele, MD, AHNS 会长-选举

10:25 AM - 11:00 AM AHNS 会长演讲和总统荣誉

“我们展示图片，他们展示曲线”

John A. Ridge, MD, PhD, 首席头颈部外科，Fox Chase 肿瘤中心，费城，PA

荣誉服务奖
- Mark K. Wax, MD

总统表彰
- Thomas F. Pajak, MD
- Walter J. Curran, MD
- Corey J. Langer, MD

11:00 AM - 12:00 PM 科学会议 #5

主持人：Michael Kupferman, MD, Ellie Maghami, MD, Jorge Pinho, MD 和 David L. Schwartz, MD

10:40 AM S030: 背景分析：患者口内前癌的结局

Vanda M Stepanek, MD PhD, Dianna B Roberts, PhD, Adel K El-Naggar, MD PhD, Martin W Jack, DDS MS, Vassiliki Papadimitrapoukoulou, MD, Ann M Gillenwater, MD; MD Anderson 肿瘤中心。

10:58 AM S031: 非侵入性早期诊断口内恶性和潜在恶性病变的荧光光谱学。

Pankaj Chaturvedi, FACS FAIS FICS MNAMS, Pradeep K Gupta, Shovan Majumdar; Tata 膜院医院,孟买和 Center for Advanced Technology, Indore。

11:06 AM S032: 口腔鳞状细胞癌：预测复发后的预后。

Michael Kernohan, Dr, Jonathan Clark, Dr, Kan Gao, Mr, Ceri Hughes, Dr, Ardalan Ebrahimi, Dr; Sydney 头颈部癌症研究所。

11:14 AM 讨论 - 6 分钟

11:20 AM S033: 靶向治疗抵抗的基质子细胞群体在头颈部鳞状细胞癌。

Devraj Basu, MD PhD, Thierry-Thien K Nguyen, MS, Kathleen T Montone, MD, Anil K Rustgi, MD, Min Xiao, MS, Gregory S Weinstein, MD, Meenhard Herlyn, DVM DSc; The University of Pennsylvania, Philadelphia VA 医疗中心, The Wistar Institute。

11:28 AM S034: 动脉内人类唾液细胞的递送治疗唾液细胞的缺失。

Millie Surati, MD, Seth Purcell, Shay Soker, PhD, Tamer AboulShwareb, MS MD PhD, James J Yoo, MD PhD, Christopher A Sullivan, MD; 部门耳鼻咽喉科-头颈部外科, Wake Forest 大学医学院; Wake Forest 研究所, Winston-Salem, 头和颈部癌症研究所。

11:36 AM S035: 通过抑制 STAT3 氯化铂对头颈部癌症的敏感化。

Waleed M Abuzeid, MD, Samantha Davis, BS, Alice Tang, BS, Lindsay Saunders, BS, Jiayuh Lin, PhD, James R Fuchs, PhD, Carol R Bradford, MD, Thomas E Carey, PhD; University of Michigan 和 The Ohio State University。

11:44 AM 讨论 - 6 分钟

12:00 PM - 1:00 PM 拉春节与展商

BALLY'S EVENT CENTER
1:00 PM - 2:00 PM

**SCIENTIFIC SESSION #6**

**PLATINUM ROOM**

**Moderators:** Terry A. Day, MD, David Goldenberg, MD and Christine G. Gourin, MD

1:00 PM  **SO36: DECISION MAKING FOR THE EXTENT OF THYROIDECTOMY IN PATIENTS WITH ATYPICAL CYTOLOGY.** Manish D Shah, MD MPhil FRCSC, Andrew Conrad, Aadil Ahmed, Spiro Eski, MD, Christina MacMillan, MD, Jeremy L Freeman, MD FRCS FACS; Mount Sinai Hospital, University of Toronto.

1:08 PM  **SO37: SURGICAL PRACTICE PATTERNS IN THE MANAGEMENT OF PAPILLARY THYROID MICROCARCINOMA.** Arthur W Wu, MD, Marilene B Wang, MD, Chau Nguyen, MD; UCLA Division of Head and Neck Surgery, Los Angeles, CA, USA; Anacapa Surgical Associates, Ventura, CA, USA.

1:16 PM  **SO38: VOLUME-BASED TRENDS IN THYROID SURGERY.** Christine G Gourin, MD, Robert E Bristow, MD, Ralph P Tufano, MD, Arlene A Forastiere, MD, Wayne M Koch, MD, Timothy M Pawlik, MD; Johns Hopkins Medical Institutions.

1:24 PM  Discussion – 6 minutes

1:30 PM  **SO39: PROPHYLACTIC CENTRAL LYMPH NODE DISSECTION FOR CLINICALLY NODE-NEGATIVE PAPILLARY THYROID MICROCARCINOMA: ITS IMPACT ON POSTOPERATIVE THYROGLOBULIN LEVEL, RECURRENCES AND COMPLICATIONS.** Yoon Kyoung So, MD, Young-Ik Son, MD, Min Young Seo, MD, Gil Jun Lee, MD, Sang Duk Hong, MD; Inje University Paik Hospital, Samsung Medical Center.

1:38 PM  **SO40: ROUTINE PARATHYROID LOCALIZATION WITH 4-D COMPUTED TOMOGRAPHY/ULTRASOUND IN PATIENTS WITH HYPERPARATHYROIDISM.** David I Kutler, MD, Rachel A Moquete, BA, William I Kuhel, MD, Eli Kazarm, MD; Weill Cornell Medical Center.

1:46 PM  **SO41: INTRAOPERATIVE PARATHYROID HORMONE MONITORING IN PARATHYROIDECTOMY; IS IT MANDATORY?** Aviram Mizrachi, MD, Gideon Bachar, MD, Tuvia Hadar, MD, Raphael Feinmesser, MD, Thomas Shpitzer, MD; Department of Otorhinolaryngology and Head and Neck Surgery, Rabin Medical Center, Beilinson Campus, Petach Tikva, and Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv, Israel.

1:54 PM  Discussion – 6 minutes

---

2:00 PM - 3:10 PM

**PANEL: ROLE OF SURGERY IN LABORATORY THYROID CANCER – SUPPORTED BY CLINICAL DATA?**

**Panel Moderator:** Ashok R. Shaha, MD

**Panelists:** Quan-Yang Duh, MD, Bryan McIver, MBChB, PhD, Christopher R. McHenry, MD and Lisa A. Orloff, MD

This panel will discuss issues specifically related to microscopic and laboratory thyroid cancer: its implications, prognostic value, and treatment choices supported by clinical data.

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

- To discuss the current explosion of thyroid carcinoma.
- To evaluate diagnostic tests and risk analysis.
- To identify which nodules to biopsy.
- To discuss the treatment of microcarcinoma- surgery, observation etc.
- To identify which central neck in such patients.

---

3:10 PM - 3:30 PM

**Afternoon Break with Exhibitors**

**BALLY’S EVENT CENTER**

AHNS acknowledges our Gold Level Donor for their support of the Afternoon Break

**STRYKER**

---

3:30 PM - 4:00 PM

**NCCN GUIDELINES DISCUSSION**

**Panel Moderator:** David G. Pfister, MD

This session will review the NCCN practice guidelines development process. The management guidelines for poor risk adjuvant disease and/or advanced oropharynx cancer will be discussed (time permitting).

“NCCN Guidelines Development Process”

David G. Pfister, MD

“Case Studies: Poor Risk Adjuvant and/or Advanced Oropharynx Cancer”

David W. Eisele, MD, William M. Lydiatt, MD, Ellie Maghami, MD and Bevan Yueh, MD

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

- To explain the NCCN practice guidelines development process.
- To apply the NCCN practice guidelines in patient management.
- To optimize treatment selection and performance.
4:00 PM - 5:00 PM  SCIENTIFIC SESSION #7

Moderators: Floyd “Chris” Holsinger, MD, Cherie-Ann O. Nathan, MD and Theodoros N. Teknos, MD

4:00 PM  S042: INCREASED TOLL-LIKE RECEPTOR EXPRESSION AND ACTIVITY IN REGULATORY T CELLS IN PATIENTS WITH HEAD AND NECK CANCER. Clarissa Wild, Michael T Lotze, MD PhD, Sven Brandau, PhD, Thomas K Hoffmann, MD, M Lindemann, PhD, Astrid Westendorf, PhD, Jan Buer, MD, Stephan Lang, MD, Christoph Bergmann, MD PhD; Department of Otorhinolaryngology, University of Essen.

4:08 PM  S043: CELLULAR IMMUNITY CORRELATES WITH HUMAN PAPILLOMA VIRUS-16 (HPV-16) STATUS AND OUTCOME IN PATIENTS WITH ADVANCED OROPHARYNGEAL CANCER. D Wansom, E Light, PhD, F Worden, MD, M E Prince, MD, S Urba, MD, D B Chepeha, MD, K Cordell, DDS, A Eisbruch, MD, J Taylor, PhD, N D’Silva, DDS, J Moyer, MD, C R Bradford, MD, T E Carey, PhD, G T Wolf, MD; Depts. of Otolaryngology-Head and Neck Surgery, Periodontics and Oral Medicine, Radiation Oncology, Internal Medicine and Biostatistics, University of Michigan.

4:16 PM  S044: FAS AND FAS LIGAND POLYMORPHISMS AND RISK OF SECOND PRIMARY MALIGNANCY IN PATIENTS WITH INDEX SQUAMOUS CELL CARCINOMA OF THE HEAD AND NECK. Mark E Zafereo, MD, Erich M Sturgis, MD, Dapeng Lei, Qingyi Wei, PhD, Guojun Li, PhD; MD Anderson Cancer Center.

4:24 PM  Discussion – 6 minutes

4:30 PM  S045: TRANSORAL SURGERY USING ROBOTIC SURGICAL SYSTEM FOR HYPOPHARYNGEAL CARCINOMAS Se-Heon Kim, MD, Young Min Park, MD, Won Shik Kim, MD, Jin Sei Jung, MD, Eun Chang Choi, MD; Yonse University College of Medicine.

4:38 PM  S046: TRANSORAL HIGHLY ARTICULATED ROBOTIC SURGERY (THARS) OF THE LARYNX: A NOVEL TECHNOLOGY AND APPLICATION. Carlos M Rivera-Serrano, MD, Brett Zubiate, MS, Rick Kuenzler, Howie Choset, Marco Zenati, MD, Steve Tully, Ummaheswar Duvvuri, MD PhD; University of Pittsburgh; Cardiorobotics, Inc; Carnegie Mellon University.

4:46 PM  S047: TRANSORAL ROBOTIC SURGERY FOR HEAD AND NECK SQUAMOUS CELL CARCINOMA: 1 AND 2-YEAR SURVIVAL ANALYSIS. Hillary N White, MD, Eric J Moore, MD, Jeffrey S Magnuson, MD; University of Alabama at Birmingham and Mayo Clinic in Rochester, Minnesota.

4:54 PM  Discussion – 6 minutes

5:00 PM  Meeting Adjourns

5:00 PM - 5:45 PM  FELLOWSHIP INFORMATION SESSION

5:30 PM - 7:00 PM  PRESIDENT’S POSTER DISCUSSION SESSION

7:15 PM - 8:30 PM  AHNS PRESIDENT’S RECEPTION

Please join Dr. Drew Ridge and his wife, Dr. Elin Sigurdson, for an evening reception with the AHNS President.

All registered AHNS attendees and guests are welcome.

AHNS acknowledges our Platinum Level Donors for their support of the reception:

BRISTOL-MYERS SQUIBB

ETHICON ENDO-SURGERY, INC.
Faculty Listing

Elizabeth A. Blair, MD - Chicago, IL
Carol R. Bradford, MD - Ann Arbor, MI
Joseph A. Califano, MD - Baltimore, MD
Claudio R. Cernea, MD - San Paulo, Brazil
Robert L. Comis, MD - Philadelphia, PA
Terry A. Day, MD - Charleston, SC
Joseph J. Disa, MD - New York, NY
Quan-Yang Duh, MD - San Francisco, CA
David W. Eisele, MD - San Francisco, CA
Gady Har-El, MD - Hollis, NY
Adel El-Naggar, MD, PhD - Houston, TX
Robert L. Ferris, MD, PhD - Pittsburgh, PA
Arlene A. Forastiere, MD - Baltimore, MD
Gerry F. Funk, MD - Iowa City, IA
Neal D. Futran, MD - Seattle, WA
David Goldenberg, MD - Hershey, PA
Christine G. Gourin, MD - Baltimore, MD
Matthew M. Hanasono, MD - Houston, TX
Floyd “Chris” Holsinger, MD - Houston, TX
Michael Kupferman, MD - Houston, TX
David Kutler, MD - New York, NY
Stephen Y. Lai, MD, PhD - Houston, TX
Derrick Lin, MD - Boston, MA
William M. Lydiatt, MD - Omaha, NE
Ellie Maghami, MD - Duarte, CA
Jeffrey S. Magnuson, MD, FACS - Birmingham, AL
Christopher R. McHenry, MD - Cleveland, OH
Bryan McIver, MBChB, PhD - Rochester, MN
Cherie-Ann O. Nathan, MD - Shreveport, LA
Lisa A. Orloff, MD - San Francisco, CA
Snehal Patel, MD, MS - New York, NY
Kepal N. Patel, MD - New York, NY
David G. Pfister, MD - New York, NY
Jorge Pinho, MD - Recife, Brazil
John A. Ridge, MD, PhD - Philadelphia, PA
James Rocco, MD, PhD - Boston, MA
Eben L. Rosenthal, MD - Birmingham, AL
Sandeep Samant, MS, FRCS - Memphis, TN
David L. Schwartz, MD - New Hyde Park, NY
Ashok R. Shaha, MD - New York, NY
Bhuvanesh Singh, MD, PhD - New York, NY
Richard V. Smith, MD - Bronx, NY
Erich M. Sturgis, MD - Houston, TX
Theodoros N. Teknos, MD - Columbus, OH
Andy Trotti, III, MD - Tampa, FL
Jan B. Vermorken, MD, PhD - Edegem, Belgium
Mark K. Wax, MD - Portland, OR
Gregory T. Wolf, MD - Ann Arbor, MI
Richard J. Wong, MD - New York, NY
Bevan Yueh, MD - Minneapolis, MN
**Faculty, Presenter & Leadership Disclosures**

The following faculty, presenters & leadership do not have any relevant financial relationships or significant commercial interests associated with their participation at the AHNS 2010 Annual Meeting. If name is not listed immediately below, please refer to the list further below.

<table>
<thead>
<tr>
<th>Name</th>
<th>Commercial Interest</th>
<th>What Was Received</th>
<th>For What Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jay O. Boyle, MD*</td>
<td>Neal D. Futran, MD*</td>
<td>Bryan McIver, MD</td>
<td>Ashok Shaha, MD</td>
</tr>
<tr>
<td>Carol Bier-Lanning, MD</td>
<td>Christine G. Gourin, MD*</td>
<td>Bharat B. Mittal, MD*</td>
<td>Bhuvanesh Singh, MD*</td>
</tr>
<tr>
<td>Joseph A. Califano, MD*</td>
<td>Jennifer R. Grandis, MD*</td>
<td>Cherie-Ann O. Nathan, MD</td>
<td>Richard V. Smith, MD</td>
</tr>
<tr>
<td>Thomas E. Carey, PhD*</td>
<td>Matthew Hanasono, MD</td>
<td>Lisa Orioff, MD</td>
<td>Erich M. Sturgis, MD</td>
</tr>
<tr>
<td>Claudio R. Cernea, MD</td>
<td>Gady Har-El, MD*</td>
<td>Kepal N. Patel, MD*</td>
<td>Theodoros N. Teknos, MD</td>
</tr>
<tr>
<td>Robert Comis, MD</td>
<td>David Kutler, MD</td>
<td>Snehal Patel, MD*</td>
<td>Andy Trotti, III, MD</td>
</tr>
<tr>
<td>Daniel G. Deschler, MD*</td>
<td>Stephen Y. Lai, MD*</td>
<td>Jorge Pinho, MD</td>
<td>Marilene B. Wang, MD*</td>
</tr>
<tr>
<td>Joseph J. Isa, MD</td>
<td>Nancy Lee, MD*</td>
<td>Mark Prince, MD*</td>
<td>Mark Wax, MD</td>
</tr>
<tr>
<td>David Eisele, MD</td>
<td>Derrick Lin, MD</td>
<td>James W. Rocco, MD, PhD*</td>
<td>Richard J. Wong, MD*</td>
</tr>
<tr>
<td>Adel El-Naggar, MD</td>
<td>William Lydiatt, MD*</td>
<td>Eben Rosenthal, MD</td>
<td>Bevan Yueh, MD*</td>
</tr>
<tr>
<td>Robert L. Ferris, MD, PhD*</td>
<td>Ellie Maghami, MD*</td>
<td>Sandeep Samant, MS</td>
<td>Quan-Yang Duh, MD</td>
</tr>
<tr>
<td>Arlene Forastiere, MD</td>
<td>Christopher McHenry, MD</td>
<td>David L. Schwartz, MD*</td>
<td></td>
</tr>
</tbody>
</table>

*Indicates a Member of the Program Committee.
S001 QUALITY AND PERFORMANCE INDICATORS FOR AN ACADEMIC HEAD AND NECK SURGICAL ONCOLOGY DEPARTMENT: Randal S. Weber, MD; Scott Eastman, MBA; Ehab Y Hanna, MD; Olubumi Akwumi, MS; Amy Hessel, MD; Stephen Y Lai, MD PhD; Leslie Kian, MBA; Michael Kupferman, MD; Dianna Roberts, PhD; Department of Head and Neck Surgery, University of Texas MD Anderson Cancer Center, Houston, Texas.

Introduction: Health care costs are rapidly outstripping a level of economic sustainability. Delivery of high quality and effective care will be the underpinnings of cost control. Future payments to health care providers may be tied to meeting quality and performance benchmarks that are adjusted for patient acuity. The study objective was to create the methodology for assessing physician performance and quality of care delivered in a tertiary surgical oncology practice and to develop a monitoring tool for the utilization of global and subspecialty-specific quality and performance indicators that positively impact patient care, safety, and satisfaction.

Methods: Between 2004 and 2008 data was collected on the following outcome measures for 10 surgeons. These included length of stay (LOS), return to operating room (OR) within 7 days of surgery, and 30-day: mortality, hospital readmission, transfusion, and wound infection. Patients were divided into two groups, high and low acuity, based on the extent of their procedure. High acuity procedures were: mandibulotomy, pharyngolaryngectomy, and major glossectomies, all with major reconstruction. Low acuity procedures were: laryngoscopy, lymphadenectomy, minor glossectomies, parotidectomy, and thyroidectomy. To assess relative performance by surgeon, the number of negative indicators developed by each patient was enumerated and the percent of cases for each physician that developed one or more negative indicators, for low acuity cases, and two or more negative indicators, for high acuity cases was determined. 2234 low acuity and 384 high acuity procedures were performed.

Adjustments were made for comorbid conditions that included cardio-vascular disease, chronic obstructive pulmonary disease (COPD), diabetes, liver disease, prior heart failure, and renal disease. The impact of these factors was examined in two ways: the presence of any comorbidity and any two or more comorbidities.

The procedure acuity, comorbid conditions and influence of the surgeon were used to develop a risk estimates. Physicians were ranked on each positive or negative indicator among cases stratified by procedure acuity.

Results: The methodology allowed for grouping commonly performed head and neck surgical procedures into two major categories based upon scope of the procedure. Available comorbidity data permitted an adjustment of risk thereby removing this as a bias for examining surgical outcomes by provider. Patients undergoing high acuity procedures had a significantly higher proportion of 2 or more comorbid conditions than patients undergoing low acuity procedures (29% vs. 15%) and high acuity procedures, as expected, were associated with greater LOS (median of 8 days vs. 1 day), increased blood product usage (41% vs. 3%), and higher rates of all the other negative indicators. The relative risk estimates for two or more negative quality or performance indicators was as follows: procedure acuity high vs. low (RR=3.9), operating physician (RR=3.4) and co-morbid conditions (RR=1.9).

Conclusions: The data demonstrated the feasibility of examining the impact of procedure type, physician influence and comorbidity on accepted performance measures and how this methodology can be used to evaluate physician performance. These data may identify best practices and provide benchmarks that permit comparison of physician performance.

S002 TRANSORAL ROBOTIC SURGERY (TORS): A MULTICENTER STUDY TO ASSESS SAFETY, FEASIBILITY AND EFFICACY. Gregory S. Weinstein MD FACS, Professor and Vice Chairman, J. Scott Magnuson MD FACS, Associate Professor of Surgery, Eric J Moore MD FACS, Associate Professor, William R Carrol MD FACS, Professor, Kerry D, Olsen MD FACS, Bert O’Malley, Professor and Chairman, F. Christopher Holsinger, Associate Professor, F. Christopher Holsinger, Associate Professor; Department of Otorhinolaryngology: Head and Neck Surgery, The University of Pennsylvania; Department of Otorhinolaryngology, Mayo Clinic, Minnesota; Department of Head and Neck Surgery, The University of Texas MD Anderson Cancer Center, Houston.

Background: Single institution series have demonstrated the potential for Transoral Robotic Surgery (TORS) for the treatment of head and neck cancer. We present here the results of a multicenter study to assess safety, feasibility and efficacy of this minimally invasive approach. Objectives: To determine the safety, feasibility and efficacy of transoral robotic surgery in a multicenter trial. Design and Setting/Interventions: A review of patients undergoing TORS in multicenter prospective clinical trial in academic tertiary referral centers. Patients: 192 patients were initially screened but inadequate exposure did not permit TORS in 13 (6.7%). In two additional patients, TORS was performed but intraoperatively converted to an “open” procedure. Thus, our intent-to-treat population had a total of 177 patients (average age: 59 yrs; 81% male). 98.3% had a Charlson comorbidity index of <5. 162 patients had malignant tumors; 15 with benign disease. Patients had tumors of the oropharynx (77%), larynx (15%), and other sites, including the hypopharynx and oral cavity, (8%). Average follow-up was 354 days. Results: For all 177 patients undergoing TORS, we found an average hospital stay post-operatively was 4.2 days. 12.4 % of all patients (22/177) required tracheostomy in the perioperative period, but only 2.3% (4/177) had their tracheostomy at last follow-up.

Average estimated blood loss was 82.8 cc and no patient required transfusion. Thirty-day mortality was 4.3% (7/162). Average operative time, including time for exposure and robotic docking was 162 minutes. At 12 months following TORS, only 7.4% of patients required gastrostomy for alimentation. Summary: In this multicenter study, we demonstrate that TORS is an safe, feasible and effective across institutions and surgeons. There was no perioperative mortality and few serious adverse events. We document a low rate of positive surgical margins and excellent functional outcomes. These findings suggest that TORS should play an important role in the multidisciplinary management of head and neck cancer.

S003 EVALUATION OF GRADE 3/4 MUCOSITIS AND DYSPHAGIA FOR THREE DIFFERENT RADIOThERAPY REGIMENS, WITH AND WITHOUT Cetuximab, IN LOCOREGIONALLY ADVANCED HEAD AND NECK CANCER. J A Bonner, MD, P M Harari, MD, J Grutt, MD, H Youssoufiian, MD, J Zhu, PhD, K K Ang, MD; The University of Alabama at Birmingham, Birmingham, AL, USA; University of Wisconsin, Madison, WI, USA; Vail D’Hebron University Hospital, Barcelona, Spain; ImClone Systems Corporation, Branchburg, NJ, USA.

Background: Patients with locoregionally advanced head and neck cancer (LAHNC) benefit form altered fractionated radiotherapy, compared to once-daily radiotherapy, when radiotherapy alone is the primary treatment. Altered fractionated radiotherapy may not be as important when chemotherapy is given in combination with radiotherapy. The acute toxicities of mucositis and dysphagia can increase with more aggressive radiotherapy regimens. This analysis compared the rates of grade 3/4 mucositis and dysphagia for three different radiotherapy regimens with or without cetuximab. Methods: Patients (n=424) with LAHNC of the larynx, hypopharynx or oropharynx were entered on a phase III randomized trial of radiotherapy alone vs. radiotherapy with weekly cetuximab. As previously reported, the addition of cetuximab resulted in an improvement in locoregional control and survival (NEJM, 354:567-578). Physicians were allowed to treat patients with one of three radiotherapy (RT) regimens: 1) Once-daily radiotherapy (ODR) with 70 Gy / 35 fractions, 2) Twice-daily radiotherapy (TDR) with 72 – 78.6 Gy / 80 – 103 fractions or 3) Gy / 1.8 Gy daily and 1.5 Gy a second daily concomitant boost fraction during the last 12 days of treatment (CBR). Patients who received cetuximab underwent a loading dose of 400 mg/m² for 6 – 7 weekly treatments during radiotherapy. Toxicities were assessed by the Radiation Therapy Oncology Group (RTOG) criteria and comparisons of toxicities rates were made by chi square analyses.

Results: The trial included 424 patients (211 received cetuximab and radiotherapy and 213 received radiotherapy alone). Mucositis was reported in 397/424 patients and dysphagia was reported in 270/424 patients.
patients. Grade 3/4 mucositis or dysphagia by treatment is shown below.

<table>
<thead>
<tr>
<th>Radiation Fractionation</th>
<th>Mucositis*</th>
<th>Dysphagia*</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRT</td>
<td>11%</td>
<td>9%</td>
</tr>
<tr>
<td>RT alone</td>
<td>20%</td>
<td>17%</td>
</tr>
<tr>
<td>CRT + Cetuximab</td>
<td>25%</td>
<td>20%</td>
</tr>
<tr>
<td>RT alone + Cetuximab</td>
<td>30%</td>
<td>25%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ODR</th>
<th>n</th>
<th>%</th>
<th>p</th>
<th>n</th>
<th>%</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>CRT</td>
<td>11</td>
<td>20%</td>
<td></td>
<td>14</td>
<td>28%</td>
<td></td>
</tr>
<tr>
<td>RT alone</td>
<td>20</td>
<td>55%</td>
<td></td>
<td>21</td>
<td>52%</td>
<td></td>
</tr>
<tr>
<td>CRT + Cetuximab</td>
<td>20</td>
<td>55%</td>
<td></td>
<td>21</td>
<td>52%</td>
<td></td>
</tr>
<tr>
<td>RT alone + Cetuximab</td>
<td>30</td>
<td>55%</td>
<td></td>
<td>31</td>
<td>51%</td>
<td></td>
</tr>
<tr>
<td>NS</td>
<td>20</td>
<td>46%</td>
<td></td>
<td>25</td>
<td>49%</td>
<td></td>
</tr>
</tbody>
</table>

Grade 3/4.

Evaluations demonstrated significantly more grade 3/4 mucositis for TDR + CBR vs. ODR (p = 0.0001) and grade 3/4 dysphagia for TDR + CBR vs. ODR (p = 0.0008). **Conclusions:** This study demonstrates that cetuximab did not increase grade 3/4 mucositis or dysphagia for any of the three radiotherapy regimens. The two altered fractionation regimens resulted in significantly more grade 3/4 mucositis and dysphagia compared to once-daily radiotherapy. The onset and resolution rates for mucositis and dysphagia will be presented.

**S004**

FIRST REPORT OF VALIDATION OF THE SYDNEY SWALLOW QUESTIONNAIRE (SSQ) IN A HEAD AND NECK CANCER POPULATION.

Raghav Dwivedi, MRCS DOHNS MS, Suzanne St. Rose, PhD, Afroz S Khan, MRCS, Christopher Pepper, MRCS DOHNS, Christopher M Nutting, MD FRCR, Peter M Clarke, FRCS, Cyrus J Kerawala, FRCS FDSRCS, Peter H Rhys-Evans, FRCS, Kevin J Harrington, FRCr PhD, Rehan Kazi, MS FRCs PhD; Head and Neck Unit, Royal Marsden Hospital, Fulham Road, London, SW3 6JJ, UK and The Institute of Cancer Research, 123 Old Brompton Road, London SW3 3RP, UK.

**Background:** Impairment of swallowing function is seen 50-75% of head and neck cancer (HNC) survivors. Although there are a number of validated swallowing-specific questionnaires, much of their focus is on the evaluation of swallowing-related quality of life (QOL) rather than swallowing as a specific function. The aim of this study was to validate the Sydney Swallow Questionnaire (SSQ) as a swallowing-specific instrument in HNC patients.

**Materials and Methods:** Questionnaires-The Sydney Swallow Questionnaire consists of 17 well structured questions specifically for evaluation of oral and pharyngeal swallowing functions. The range of questions included in the SSQ address symptoms referable to combinations of 3 broad variables: (1) anatomic region; (2) type of dysfunction; and (3) swallowed bolus consistency. It is based on 100 mm long visual analog scales scored from 0-100. For the purpose of validation, we utilized the MDADI as the gold-standard for a swallow scale. Patients-Following local research ethics committee approval, sixty-two consecutive English-speaking patients in follow-up for oral or oropharyngeal cancers at The Royal Marsden Hospital, London, UK were recruited for this study. Administration of Questionnaire-Both the questionnaires were given to the patients in the outpatient for returning via post. A randomly selected subset of thirty-one patients was asked to complete both the questionnaires (SSQ & MDADI) again after four weeks in order to assess test-retest reliability. Statistical Analysis-Internal consistency and test-retest reliability was assessed using Cronbach’s alpha and Spearman’s correlation coefficient, respectively. Construct and group validity were determined using Spearman’s correlation coefficient and Mann-Whitney U-test respectively using the commercially available Statistical Package for Social Sciences-15 statistical software (SPSS Inc., Chicago, IL, USA).

**Results:** Patient characteristics-Fifty-four out of 62 patients (87%) returned fully completed questionnaires. The median age of the group was 58.9 years (range: 35.9-80.0) with 35 males and 19 females. Reliability-Internal consistency: The internal consistency reliability for Total SSQ (mean of Q2-Q16) as calculated by Cronbach’s alpha was 0.95. Test-retest reliability- Test-retest reliability of Total SSQ and General SSQ as calculated by Spearman’s rank correlation coefficient were 0.83 and 0.73 respectively. For SSQ QOL the coefficient was 0.71. Validity-Construct Validity: For construct validity we compared Total SSQ scores and scores of General SSQ and QOL SSQ with Global and Physical domains of MDADI using Spearman’s rank correlation coefficients. The correlation coefficients between Total SSQ, the General SSQ and QOL-SSQ scores and Global MDADI scores were 0.72, 0.64 and 0.78, respectively. Similarly the correlation coefficients for Total SSQ and General SSQ with the Physical domain of MDADI were found to be 0.83 and 0.71, respectively. Direct correlations between similar questions of both the questionnaires revealed strong to moderate correlations. Group Validity-Significant differences (P<0.05) were detected when patients were grouped according to duration of follow-up, tumor T stage and co-morbidity. **Conclusion:** We were able to demonstrate the reliability and validity of the SSQ in HNC patients. The SSQ is a precise, reliable and valid tool for assessing swallow in this patient group.

**S005**

HEAD AND NECK CANCER PATIENTS REFERRED TO A TERTIARY CENTER AFTER PRIOR TREATMENT: COMPLIANCE WITH OR DEVIATION FROM NATIONAL COMPREHENSIVE CANCER NETWORK TREATMENT GUIDELINES. Carol M Lewis, MD MPH, Amy C Hessel, MD, Dianna B Roberts, PhD, Yunxia Z Guo, BSE, F Christopher Holsinger, MD, Lawrence E Ginsberg, MD, Adel K El-Naggar, MD, Randal S Weber, MD; UT MD Anderson Cancer Center.

**Background:** An extensive amount of resources has been invested by the National Comprehensive Cancer Network (NCCN) in developing guidelines to improve the care delivered for patients with head and neck cancer. Data is lacking with regard to compliance and utilization of these guidelines outside of tertiary centers. We evaluated the treatment received and concordance with NCCN guidelines for patients referred to our tertiary center who were treated prior to referral. **Methods:** A prospective recruitment and retrospective chart review of patients identified at multidisciplinary treatment planning conference in the fiscal year 2008-2009 who had received prior treatment and presented with recurrent or persistent disease. All facets of prior care were examined, including the time from initial symptoms to diagnosis and whether their management was compliant with or deviated from NCCN guidelines for head and neck cancer. **Results:** 143 patients were identified, of whom 25 (17.5%) had persistent or recurrent disease. The average time from initial symptoms to diagnosis for patients who presented with persistent disease was 48.5 weeks. Half of the patients who presented with persistent or recurrent disease had either endocrine (23%) or oral cavity (25%) primary cancers, with the rest of patients being distributed among 7 other sites. 44.4% of the patients who presented with recurrent or persistent disease had pre-referral care that was non-compliant with NCCN guidelines. Two-thirds of these patients had inadequate surgical management, 25% did not receive indicated adjuvant therapy, and 8% refused indicated treatment. **Conclusion:** In the cohort of patients studied significant deviation from NCCN guidelines for head and neck cancer treatment was observed. Particularly concerning is the failure to administer adjuvant radiation therapy when indicated by NCCN guidelines. Economic and non-economic costs are substantial and include lost wages, cost of “do-over” therapy, and potentially diminished survival. Measures to insure that patients receive therapy according accepted guidelines should be a national priority.

**S006**

DISPARITIES IN HEAD AND NECK CANCER TREATMENT BASED ON AGE: Alexander Langerman, MD, Lauren Hensley, BA, Kerstin M Stenson, MD, Ezra E W Cohen, MD, Elizabeth A Blair, MD; The University of Chicago Medical Center.

With increasing life expectancy in the general population, aggressive, multimodality treatment of head and neck cancer is increasingly considered for older individuals. However, there are disparities in clinical trial participation by older patients and results of such clinical trials may be difficult to extrapolate to patients of advanced age. This institution’s cancer registry was accessed for all newly diagnosed patients with head and neck cancer between 2002 and 2006, identifying 527 patients. Three hundred, sixty-nine (70%) were under age 65, 125 (24%) were age 66 to 79, and 33 (6%) were age 80 and over. The percentage of patients with advanced stage disease (III and IV) and no distant metastases was 69% (n=256), 65% (n=81), and 61% (n=20), respectively. Patients enrolled and treated on clinical trials represented 29% and 30%, respectively, of the patients under age 65 and 65 to 79 with locoregionally advanced disease. However, no patients aged 80 and over were enrolled in a clinical trial during this time period. Of the 20 patients age 80 and over and with locoregionally advanced disease, 13 had an adequate performance status for treatment with curative-intent chemoradiation, but were all...
treated off-protocol. Five (3%) of the 13 were NED at last follow-up, 4 (31%) died within one year of completing therapy. 3 (23%) did not complete therapy and died of disease, and 1(8%) was lost to follow-up at 1 year. Older patients with advanced head and neck cancer may be appropriate for clinical trial enrollment, and further research in needed into the barriers to enrollment faced by these patients.

**S007**

**SALVAGE SURGERY AFTER ORGAN PRESERVATION REGIMENS.** Rachel M Brock, MD; Nathan Hales, MD; Greg Krempel, MD; Jesus E Medina, MD; Oklahoma University Health Sciences Center, Department of Otorhinolaryngology.

*Introduction:* Most laryngectomies today are done for persistent or recurrent tumor after organ preservation attempts using radiation therapy (RT) or chemotherapy and radiation (CRT). The outcomes reported by RTOG (RTOG-9111) for local regional control (LRC), overall survival (OS) and complication rates were encouraging. However recent publications report abysmal outcomes. Therefore it seems critical to report outcomes from different institutions in order to better define the expectations of patients and clinicians following salvage surgery. Furthermore, the role of elective neck dissection (END) in these cases needs to be defined.

*Purpose/Objective(s):* The purpose of this study is to determine the rates of LRC, OS, and complications with salvage surgery after previous treatment with radiation +/- chemotherapy and also determine the prevalence and location of subclinical cervical lymph node metastases in patients undergoing salvage laryngectomy.

*Materials/Methods:* Retrospective review of 50 patients who underwent salvage total laryngectomy (STL) after organ preservation treatment for laryngeal and pharyngeal cancer. 33 patients had definitive RT and 17 had CRT. *Results:* At time of salvage tumor staging was T3 or T4 in 56% of patients in the RT group, 43% in the CRT group. Median time to recurrence after initial therapy was 11 mos. in both groups. Median follow-up after STL was 29 mos. in the RT group and 20 mos. in the CRT group. The median OS after salvage surgery in the RT group was 35 mos. (4-94 mos.) while in the CRT group it was 31 mos. (8-97 mos.). At the last follow-up OS is 60% after RT and 71% after CRT. Median disease free survival (DFS) is 24 mos. in the RT group and 18 mos. in the CRT group. LRC in the RT group was 58% after RT and 76% after CRT. Recurrence occurred locally in 24% of RT patients and 5.8% of CRT patients. Neck recurrence most commonly involved II and III and occurred in 18% and 11.7% in both groups. Distant metastases occurred in 21% and 5.8% respectively. 47 patients were staged clinically N0 and 3 were clinically N+ at the time of surgery. END was performed with STL in 36 patients. In these patients, metastases in the lymph nodes were found in 15% of the RT group and in 7% of the CRT group. A pharyngocutaneous fistula occurred in 21% of patients in the RT group and 24% in the CRT group. *Conclusions:* The LRC (58 - 76%) and OS (60 - 71%) observed in our study are encouraging. Fistula rates are lower than those reported in the literature yet they warrant improvement. The presence of occult metastases (7-15%) is low.

**S008**

**IMPACT OF TIME INTERVAL FROM BIOPSY TO START OF TREATMENT.** Gregory J Kubiczek, MD, Seungwon W Kim, MD, Umanmaheswar Duvvuri, MD, Robert Ferris, MD, Jonas Johnson, MD, Dwight E Heron, MD FACRO; University of Pittsburgh Medical Center.

*Purpose:* To investigate the relationship of interval from biopsy to start of radiotherapy (RT) in head and neck cancer (HNC).

*Patients and Methods:* 579 consecutive HNC patients treated between 2002 and 2006 were retrospectively reviewed; all patients received treatment consisting of either surgery and adjuvant RT (249) or definitive RT with or without chemotherapy (264). RT was IMRT in all patients. Median age was 63 years, the majority patients were stage III (27%) or IV (51%), 238 (41%) received concomitant chemotherapy. *Results:* In definitive RT and definitive chemotherapy patients the median time from biopsy to the start of RT was 41 days. Patients starting definitive RT ≤ 40 days from biopsy had an improved outcome versus > 40 days (overall survival 2.5 vs. 2.1 years p = 0.07). For patients who underwent surgical resection, median time from biopsy to surgery was 10 days; there was no difference in outcomes for patients with a longer interval in the time from biopsy to surgery. *Conclusion:* Median start to adjuvant RT was 64 days from the biopsy (54 days from surgery). Patients with a median start time ≤ 90 from biopsy had an improved overall survival (3.3 versus 2.4 years, p = 0.015).

*Conclusion:* While the effects of overall treatment time are well known, less information is available regarding the effects of initiation of treatment. We found a detriment in overall survival for patients with a longer interval from the time of biopsy to start of RT.

**S009**

**MANAGEMENT OF EARLY T-STAGE TONSILLAR CARCINOMAS - RETROSPECTIVE COMPARISON OF RADICAL TONSILLECTOMY VERSUS RADIATION FROM A SINGLE INSTITUTION.** Eric D Lamarr, MD; Rahul Seth, MD, Robert R Lorenz, MD, Ramon Esclamado, MD, David J Adelstein, MD, Christina P Rodriguez, MD, Jerrold Saxton, MD, Joseph Scharpf, MD; Cleveland Clinic.

*Objective:* T1 and T2 squamous cell carcinomas of the tonsil can be managed with either definitive radiation therapy or a radical tonsillectomy, which involves en bloc resection of the tonsil, underlying superior constrictor, partial base of tongue, soft palate and pharynx with or without reconstruction of the defect. We report a retrospective comparison of the Cleveland Clinic survival and functional outcomes using both of these approaches.

*Method:* All patients diagnosed with T1-2, N0-2, M0 squamous cell carcinoma of the tonsil and treated at the Cleveland Clinic between 1994 until 2007 were included in this review. The minimum follow-up for survival was 2 years, and patients with a second primary upper aerodigestive cancer were not included in the functional data. Swallowing was graded on a scale of 1-4 with 1 being a normal diet and 4 being feeding tube dependence.

*Results:* There were 27 patients treated surgically and 84 patients treated with radiation. For the surgical patients, 74% of patients were staged as T1, 33% of patients N2, 30% N1 and 37% N0. For the radiation patients, 71% of patients were staged as T2, 61% of patients N2, 20% N1 and 19% N0. 48% of the surgical patients also had postoperative radiation and 15% had concurrent chemotherapy secondary to extent of neck disease. 61% of the radiation patients had concurrent chemotherapy and 25% had staged neck dissections. The 2 year disease free survival was 85.7% for the surgical patients and 83.9% for the radiation patients (p=0.44). Within the first two months after completion of therapy, 72% of surgical patients had grade 1 swallowing versus 18.9% of radiation group (p<0.001). 88% of surgical patients achieved grade 1 swallowing on a long-term basis compared to 70% in the radiation group (p=0.046).

*Conclusions:* Radical tonsillectomy is a viable alternative to radiation for the management of early T-stage tonsillar carcinomas with favorable disease free survival. While direct comparison between the two groups is confounded by the differences in staging and treatment, there is a tendency for better swallowing outcomes among the surgical patients particularly in the immediate period after treatment. Although the retrospective nature of this study has inherent limitations, it does nevertheless provide support for continued use of radical tonsillectomy in the management of T1-2 tonsil cancers, particularly if there is minimal neck disease present.

**S010**

**POSTOPERATIVE RADIOTHERAPY IN MUCOSAL MELANOMA OF THE HEAD AND NECK. A FRENCH GETTEC MULTICENTRIC STUDY.** Adil Benlyazid, MD, Juliette Thariat, MD, Thomas Filleron, PhD; GETTEC.

*Objective:* To report the oncologic outcomes of patients with localised head and neck mucosal melanoma treated during a 28-year period on a multi-institutional retrospective setting with emphasis on the role of postoperative radiotherapy.

*Patients:* A total of 215 patients diagnosed with head and neck mucosal melanoma between 1980 and 2008 were retrospectively identified. Patients with stage III or unknown stage disease were excluded. The data of 160 patients with stage I or II mucosal melanoma of the head and neck surgically treated with or without postoperative radiotherapy were analyzed.

*Results:* Treatment regimens consisted of surgery alone (S group : 82 patients), or surgery followed by postoperative radiation (SRT group : 78 patients). The median follow-up period was 65.2 months (CI95% = [44.5;73.2]). Overall survival rates were respectively 63.5% and 37.8% at 2 and 5 years. The median survival time was 37.5 months (CI95% = [28.1;54.9]). There were no significant difference between the 2 groups concerning overall survival and disease free survival. The 5-year local control rate was significantly higher in the SRT group (55.0% vs 29.9% p = 0.0015). The cumulative incidence of distant metastasis was higher in the SRT group.
S011

COMPARTMENTAL SURGERY IN TONGUE TUMORS: LONG TERM ONCOLOGIC EVALUATION OF A NEW SURGICAL TECHNIQUE VS. CONVENTIONAL DEMOLITIVE TONGUE SURGERY. A FOURTEEN-YEAR CLINICAL EXPERIENCE. Luca Calabrese, MD, Gioacchino Giugliano, MD, Mohssen Ansarin, MD, Roberto Bruschini, MD, Angelo Ostuni, DDS MD, Valeria Navach, MD, Maria Angela Massaro, PhD, Lorenzo Preda, MD, Fausto Maffini, MD, Luigi Santoro, PhD, Daniela Alterio, MD, Fausto Chiesa, MD; European Institute of Oncology. Compartmental tongue surgery (CTS) is an anatomically based novel surgical technique with three main components: 1) anatomical approach to the disease that requires removal of the primary lesion and all of its potential pathways of progression – muscular, lymphatic and vascular; 2) identification of a distinct territory at risk for metastatic representation of disease: the parenchymal structures between the primary tumor and the cervical lymphatic chain that include the muscular (mylohyoid), neuro-vascular (lingual nerve and vein) and glandular (sublingual and submandibular) tissues; 3) preparation for a rational reconstruction in consideration of a functional defect resulting from this anatomical demolition. CTS introduces a paradigm shift in ablative oral surgery from a circumferential to a longitudinal resection of the primary lesion. It redefines surgical margins not as an arbitrary measure of tissue to be removed but as individual functional units whose removal eliminates the disease as well as all of its potential pathways of spread and recurrence (muscular, vascular and lymphatic) without increasing functional deficits compared to the accepted standard surgical approach. This technique has been employed at the European Institute of Oncology (IEO) since 1999 and we now present our oncologic results. During the time period 1994-2009 two hundred eleven patients were evaluated and operated on for primary, previously untreated neoplasias of the tongue. All patients operated on from 1994 to 1999 were subject to conventional demolitive tongue surgery (non trans-oral approach) with lateral neck dissection and those patients cared for after 1999 were operated on using CTS. Compartmental surgery significantly decreases the risk of both local (HR: 0.29, 95% CI: 0.13 – 0.68, p=0.004) and loco-regional relapses (HR: 0.34; 95% CI: 0.16 – 0.72, p=0.005), whereas no differences are reported in terms of distant relapses (HR: 1.46; 95% CI: 0.43 – 4.37, p=0.50). An important improvement is also observed in terms of overall survival: the risk of dying for any cause within the first 5 years for patients operated with compartmental surgery is of approximately one-third of that exhibited by those operated with the standard technique (HR:0.36; 95% CI: 0.21 – 0.62, p=0.0002).

S012

TFP INDUCTION THERAPY WITH RADIOIMMUNOCHEMOTHERAPY FOR THE TREATMENT OF HEAD & NECK CANCER. Wolf Oliver Jordan, Ingeborg Wildfang, Dr, Hans-Jürgen Welkborsky, Prof, Jürgen Borghardt, Dr, Hayssam Zakaria, Dr, Sepideh Fanaei, Dr, Heiko Niebuhr, Barbara Tschechne, Dr; Praxis Tschechne / Luft / Jordan, Onkologie, Lehrte, Germany; Gemeinschaftspraxis für Radioonkologie und Strahlentherapie, Hannover, Germany; AIWO GSD, Onkologie, Bad Münder, Germany. Purpose: As of the accumulating data for radiotherapy with cetuximab and the need for an induction chemotherapy containing taxotere we realized a combination of these regimes. This study evaluates the safety and feasibility of a TPF induction therapy under pegfilgrastim protection with a subsequent concomitant RT immunotherapy using cetuximab and cisplatin. Material: 56 patients (10 female/46 male) with an advanced (T3/ T4) head & neck cancer were treated. Patients were between 38 and 82 years old (median 60), Karnofski > 50%. Induction therapy consisted of three 21-day-cycles TPF (75 mg/ m2 taxotere d1; 35 mg/m2 cisplatin d1.2; 750 mg/m2 5-FU d1-6) and on d7 a protective dose of 6 mg pegfilgrastim. Before and after induction therapy PET-CT was used to evaluate response. PET-CT allowed best possible RT-planning with best adapted field margins. Subsequent radioimmunotherapy consisted of 400 mg/m2 cetuximab on day 1 (initial dose) and seven weekly cycles of 250 mg/m2 cetuximab and 40 mg/abs cisplatin on day 1. Radiotherapy on d1-5/1.8 Gy/day for a median dose 61.2 Gy (59.4 - 70.2 Gy). During the whole treatment CRP was monitored twice weekly and if necessary antibiotics were administered iv. Typical side effects (e.g. rash, mucositis) were treated accordingly. Results: All 56 patients were evaluated after therapy completion. One death occurred which was not treatment related (myocard infarct). 5 patients stopped treatment after the induction therapy. The response rate were: CR 53% (28), PR 30% (16), SD 11% (6) and PD 6% (3). 7 Grade Ill/ IV toxicities had to be observed (skin rash, diarrhea). All toxicities were reversible. In 4 patients therapy had to be interrupted for two weeks (skin rash). Karnofski index could be kept stable and in some cases even be improved. Conclusion: The new regimen is safe, shows great promise and deserves further development but should be limited to the clinical setting. PET-CT as a diagnostic tool, pegfilgrastim as a myeloprotective agent and taxotere/ cetuximab molecule make a good combination. Compartmental tongue surgery and oncologic results are drastically improved. This on the other hand sometimes reduces compliance for the radioimmunotherapy which is a general problem for this patient collective.

S013

TARGETING CK2 BY SMALL MOLECULE INHIBITOR DMAT MODULATES NF-KAPPA-B AND TP53 SIGNALING, SURVIVAL AND MIGRATION IN HEAD AND NECK CANCER. Matthew S Brown, MD, Vishnu R Kannabiran, BS, Hai Lu, MD PhD, Zhong Chen, MD PhD, Carter Van Waes, MD PhD; 1 Tumor Biology Section, Head and Neck Surgery Branch, NIDCD, NIH. Clinical Research Training Program supported jointly by NIH and Pfizer, Inc. Objective: Upregulated CK2 activity is implicated in promoting the malignant phenotype and progression of head and neck squamous cell carcinoma (HNSCC). We previously identified CK2 as an upstream kinase activating NF-κb and pro-survival and repressing TP53/TAp63 tumor suppressor transcription factors. Here, we investigate the molecular and anti-tumor effects of targeting CK2 with a small molecule inhibitor, DMAT (2-Dimethylamino-4,5,6,7-tetrabromo-1H-benzimidazole). Design: Cell lines were used from a panel of 9 University of Michigan squamous cell carcinoma (UMSCC) cell lines. Cell proliferation was measured by MTT assay. Cell cycle and induction of cell death were measured by DNA flow cytometry. The activity of NF-κbappaB, IL-8 and BCL-XL promoters were tested by the chemiluminescent reporter gene assay, and gene expression was examined by QRT-PCR. Cell migration was measured by Boyden chamber assay. Results: Concentrations as low as 10μM DMAT significantly inhibited proliferation, modulated cell cycle, and induced cell death in a dose dependent manner. 20μM DMAT inhibited cell migration at the early time point, and 40μM exhibited complete inhibition. CK2 inhibition with DMAT downregulated genes promoting survival, inflammation, angiogenesis, and adhesion, such as BCL-XL, IL-8, VEGF and ITGB4. DMAT upregulated two genes promoting apoptosis, TP53 and TAp63 and other signaling pathways, as well as downstream gene expression, which results in antitumor effects in vitro. (Supported by intramural project ZIA-DC-000016; NIH-Pfizer Clinical Research Training Program).
Oral Papers

the 3'UTR of messenger RNA (mRNA), causing translational repression or degradation. To better understand the potential role of miRNA in HNSCC carcinogenesis, miRNA-21 specific gene targets were identified and their expression signatures were assessed utilizing the power of microarray technology and bioinformatics miRNA target prediction tools. **Design:** Whole genome mRNA expression was analyzed by microarrays in HNSCC tumors, normal mucosa and a normal oral keratinocyte cell line. The candidate target gene list was further narrowed by evaluating each 3'UTR region with bioinformatics tools for miRNA-21 specificity. Expression levels of miRNA-21 gene targets were determined by reverse transcription quantitative polymerase chain reaction (RT-qPCR). Specificity of miRNA-21 for each candidate gene was assayed utilizing the luciferase miRNA target expression vector system. 

**Subjects:** Matched 13 HNSCC tumors and 5 normal mucosa total RNA samples, in addition to NOK-Si cell line RNA samples after triplicate miRNA-21 and mock ligation vector transfection were used for miRNA microarray analysis. **Results:** Microarray analysis combined with bioinformatics tools for miRNA-21 gene target prediction generated a candidate gene list, including Clusterin, Basonucin2, and Desmin (FAM48a). Expression levels of miRNA-21 gene targets were significantly lower in HNSCC tumors and miRNA-21 transfected NOK-Si cell line when compared to normal mucosa and mock transfections by RT-qPCR. Transfection of miRNA-21 significantly suppressed a luciferase-reporter containing the 3'UTR of the miRNA-21 gene target verifying the specificity of miRNA-21 for the candidate. **Conclusions:** Novel miRNA targets can be identified and validated utilizing an integrative approach with whole genome expression profiling and bioinformatics target prediction methods. miRNA-21 has several mRNA targets in HNSCC and further study is needed to evaluate their functional effects and possible use in detection, prognosis, and therapeutic outcome in HNSCC.

**S015**

**AKT PHOSPHORYLATION AS A MARKER OF RESISTANCE TO ZD6474 (VANDETANIB) IN HEAD AND NECK SQUAMOUS CELL CARCINOMA.**

Genevieve A Andrews, MD, Mitchell J Frederick, PhD, Mei Zhao, MD, David R Fooshee, Zvonimir L Milas, MD, Maria K Gule, MD, Chadd E Galer, MD, Jeffrey N Myers, MD PhD; MD Anderson Cancer Center.

The epidermal growth factor receptor (EGFR) is an attractive target for anti-cancer therapy, in head and neck squamous cell carcinoma (HNSCC). Yet often HNSCC demonstrates resistance to EGFR inhibition. Therefore, drugs that target angiogenesis by inhibiting the VEGFR (vascular endothelial growth factor receptor) in addition to EGFR, such as ZD6474 (Vandetanib), may be useful for treating HNSCC patients. To better understand the mechanisms of resistance to EGFR inhibition, as well as examine biomarkers defining EGFR inhibitor resistance, we investigated the effect of ZD6474 in a panel of 50 HNSCC lines in vitro, where the principal in vitro drug effects are thought to be through the EGFR signaling pathway. The G1S0 (50% growth inhibition) values for cell lines ranged from 0.4 µM to 14 µM between the most sensitive and most resistant lines. Using sensitive lines FAH1-13 and PCI-13 were treated for 30 hours with 4 µM ZD6474, there was more than a 70% reduction in the phosphorylation of AKT on Ser427. However, there was less than a 10% decrease in pAKT Ser427 observed for two resistant cell lines examined, SCC61 and JHU 028. There was a parallel reduction in constitutive pERK in the two sensitive cell lines following treatment with ZD6474 for 30 hours. The reduction in pERK only occurred in one of the resistant lines, SCC61. EGFR-stimulated phosphorylation of the EGFR1 was similarly inhibited in both resistant and sensitive cells by 4 µM ZD6474, indicating that resistance was not due to a difference in drug target sensitivity in these cell lines. In conclusion, our preliminary data suggest a model wherein HNSCC cells sensitive to EGFR inhibition rely heavily upon the EGFR pathway to activate and maintain proliferation and survival mechanisms such as phosphorylation of AKT, whereas resistant cells may use other receptors or signaling molecules to activate critical downstream pathways to survive in the face of EGFR inhibition.

**S016**

**A BLOOD TRANSFUSION PREDICTION MODEL IN PATIENTS UNDERGOING MAJOR HEAD & NECK SURGERY INVOLVING FREE FLAP RECONSTRUCTION.**

Manish D Shah, MD MPH FRCSc, David P Goldstein, MD FRCSc, Stuart McClusky, MD FRCP, Patrick Guillaume, MB FRCSc FACs FRACS Hon, Dale H Brown, MD FRCSc, Jonathan C Irish, MD MSc FRCSc FACs, Ralph W Gilbert, MD FRCSc; University Health Network, University of Toronto, Toronto, Canada.

**Objectives:** Perioperative blood transfusion is commonly required for major head & neck procedures and carries significant risks. Alternatives to allogenic blood transfusion are becoming available. Pre-operative risk stratification of patients allows for appropriate patient counseling and resource allocation. Thus, the objective of our study was to develop a model to reliably predict the requirement for perioperative blood transfusion in patients undergoing major head and neck surgery involving free flap reconstruction. **Methods:** Data was prospectively collected on all patients undergoing major head and neck surgery requiring free flap reconstruction at the University Health Network (Toronto, Canada) between 1999 and 2009. Over 800 patients were included in the analysis. Pre-operative variables were tested for association with the outcome of interest, perioperative transfusion. Stepwise multivariable logistic regression modeling was carried out to determine which pre-operative variables were best able to predict perioperative transfusion requirement. **Results:** A predictive model of perioperative blood transfusion requirement was constructed from the logistic regression analysis. Six pre-operative variables were found to be significant—female gender (odds ratio [OR] = 4.1), T-stage (T1/2 vs T3/4, OR = 1.4), treatment with pre-operative chemotherapy (OR = 1.9), cardiac comorbidity (OR = 1.8), pre-operative hemoglobin level (normal vs low, OR = 5.6), and type of free flap reconstruction (non-osseus vs osseus, OR = 2.3). Amongst these six variables, gender, pre-operative hemoglobin level, and type of free flap were the strongest predictors in the model. Using this model, we can predict the probability of a patient requiring a perioperative blood transfusion. **Conclusions:** We have developed a reliable model for predicting perioperative blood transfusion requirements in patients undergoing major head and neck surgery requiring free flap reconstruction. This model can be used for accurate pre-operative risk stratification. This is essential for effective patient counseling, use of cross and type, and use of alternatives to allogenic blood transfusion.

**S017**

**A CLASSIFICATION SYSTEM FOR RECONSTRUCTION OF VERTICAL HEMIPHARYNGOLARYNGECTOMY FOR HYPHARYNGEAL SQUAMOUS CELL CARCINOMA.**

Min-Sik Kim, MD PhD, Young-Hoon Joo, MD, Dong-II Sun, MD PhD, Kwang-Jae Cho, MD PhD, Jun-Ook Park, MD; The Catholic University of Korea.

**Objectives:** To evaluate microvascular reconstruction of vertical hemipharyngolaryngectomy (VHPL) defect for hypopharyngeal squamous cell carcinoma. We classified VHPL according to the extent of tumor resection to establish guidelines for its clinical application. **Methods:** We have reviewed a 12-year experience with 32 VHPL between 1998 and 2009. Based on our retrospective reassessment, the classification comprised three types of VHPL according to the extent of resection: limited VHPL (type I), resection at the lateral border of the conus elasticus to preserve both vocal cords (n=10); VHPL (type II), removal of a vertical section of the thyroid cartilage through the anterior commissure to the upper border of the cricoid cartilage with preservation of one vocal cord (n=12); and extended VHPL (type III), inclusion of a supraglottic laryngectomy (type IIla) (n=6) and/or partial cricoid cartilage resection (type IIlb) (n=4). A radial forearm free flap that included the palmaris longus tendon was used for reconstruction in 31 patients, and an anterolateral thigh flap was used in one patient. **Results:** There was no perioperative mortality, and there was a 100% free flap survival rate. Two (6.3%) patients developed a postoperative pharyngocutaneous fistula and 2 (6.3%) patients had a glottic stenosis requiring free flap reconstruction. This model can be used for accurate pre-operative risk stratification. This is essential for effective patient counseling, use of cross and type, and use of alternatives to allogenic blood transfusion.
oral papers

S018

THE NATURE AND EXTENT OF BODY IMAGE CONCERNS AMONG SURGICALLY TREATED PATIENTS WITH HEAD AND NECK CANCER: NEW FINDINGS TO PROMOTE IMPROVED PSYCHOSOCIAL CARE.

Michelle C Fingeret, PhD, Ying Yuan, MD, June Weston, Randal S Weber, MD; M. D. Anderson Cancer Center.

Introduction: Body image is recognized as a critical psychosocial issue for individuals with head and neck cancer, as the disease and its treatment can have devastating consequences involving disfigurement and functional impairment. There are enormous social implications for the body image changes experienced by these patients due to the visible nature of the facial region and its association with identity, communication abilities, and interpersonal functioning. However, limited empirical research has been conducted to obtain a comprehensive understanding of the nature and extent of body image concerns in this patient group. The purpose of this study is to obtain descriptive information about the disease-specific body image concerns of surgically treated patients, satisfaction with care received regarding body image issues, and interest in psychosocial services targeting body image disturbance.

Methods: The study sample included 256 patients with oral cavity, cutaneous, and other cancers affecting the midface at various time points relative to the initiation of surgical treatment (i.e., preoperatively, within one year of initial surgery, greater than one year following initial surgery). Patients were administered a self-report questionnaire designed for this study along with the Body Image Scale (BIS), which has been developed for cancer patients.

Results: Preliminary results demonstrate that 77% of the sample acknowledged concerns or embarrassment about body image changes at some point following diagnosis/treatment, while 57% endorsed such concerns at the time of the evaluation. Patients tended to endorse multiple types of body image concerns, though these differed slightly for each patient group. Logistic regression analyses indicated that after adjusting for age, gender, cancer type and time since surgery, the number of body image concerns was significantly associated with scores on the BIS (p < 0.0001). One additional concern increased the odds of endorsing behavioral or emotional difficulties on the BIS by 112%. Time since surgery was also significantly associated with BIS scores.

Despite considerable body image concerns prior to surgical treatment, elevated behavioral and emotional difficulties associated with body image concerns were found within one year of initial surgery (p = 0.03), with these scores remaining elevated greater than one year following surgery (p = 0.05). Up to 20% of patients expressed dissatisfaction with information provided to them about how to best cope with bodily changes or what to expect in terms of scar/care/lesion following treatment. Nearly 35% of patients surveyed indicated they would have liked additional resources to help them cope with body image changes.

Conclusions: These data provide useful information to document the nature and extent of body image concerns for this population and provide important targets for the development of psychosocial interventions. This work is directly linked to the development of a new psychosocial service targeting body image difficulties of this population, which will be briefly presented and discussed. The Body Image Therapy Service (BITS) is designed to provide evidence-based psychosocial interventions based on a cognitive-behavioral therapy model.

S019

SUBMENTAL FLAP VERSUS RADIAL FOREARM FLAP FOR ORAL CAVITY RECONSTRUCTION: COMPARISON OF OUTCOMES.

Joseph A Paydarfar, MD; Urjeet A Patel, MD; Dartmouth Hitchcock Medical Center, Lebanon, NH, USA; Northwestern University Medical Center, Chicago, IL, USA.

Background: Resection of oral cancer frequently requires flap reconstruction to preserve tongue mobility and function. While the radial forearm flap (RFFF) has been widely used for this purpose, the submental pedicled flap (SPF) is gaining popularity for intraoral reconstruction. The benefits of the SPF are thought to include ease of harvest, shorter surgery, and good functional outcome. Objectives: The purpose of this study is to compare intra-operative, post-operative, and functional results of SPF versus RFFF reconstruction for tongue and floor of mouth reconstruction. Design: Multi-institutional retrospective review.

Setting: Academic, tertiary referral center.

Patients: All patients undergoing resection of oral tongue or floor of mouth cancer followed by reconstruction with either SPF or RFFF from 2003-2009 were included.

Main Outcome Measure: Tumor stage, defect size, duration of surgery, duration of hospitalization, surgical complications, and speech and swallowing function.

Results: The study included 60 patients, 27 with SPF reconstruction and 33 with RFFF. Gender, age and TNM stage were similar for both groups. Only 7 patients had received therapy prior to the study. Mean flap size was smaller for SPF (37 cm2) than RFFF (50 cm2) (p < .0003). Patients undergoing SPF reconstruction had shorter operations (8h44m vs. 13h00m, p < .0001) and shorter hospitalization (who qualified for the study. There were 21 patients with T4 laryngeal/ hypopharyngeal flap-related, and other surgical complications were comparable between groups as was speech and swallowing function. Conclusions: Reconstruction of oral cavity defects with the SPF results in shorter operative time and hospitalization without compromising functional outcomes. The submental pedicled flap should be considered as a first line option in reconstruction of oral cavity defects less than 40 cm2.

S020

LOCAL RESPONSE TO CHEMORADIOThERAPY FOR T4 LARYNGEAL/HYPOPHARYNGEAL CARCINOMA WITH CARTILAGE INVASION.

Urjeet A Patel, MD, Lori K Howell, MD; Northwestern University; University of Illinois at Chicago.

Background: While organ preservation clinical trials have shown good efficacy in treating laryngeal and pharyngeal carcinoma, patients with cartilage invasion were excluded. Treatment choice between chemoradiotherapy (CRT) and total laryngectomy (TL) remains controversial. Recent data suggests there is an increase in use of chemoradiotherapy for T4 laryngeal carcinoma with a decrease in survival in this patient population. With regard to these findings, it is suspected that CRT as definitive treatment in T4 laryngeal carcinoma with cartilage invasion is insufficient in terms of local control. Objectives: The objective of this study is to assess local response and control after CRT for patients having T4 laryngeal and hypopharyngeal carcinoma with cartilage invasion. Methods: Patients with T4 squamous cell carcinoma of the larynx or hypopharynx with cartilage invasion from 2003 to 2009 were identified from tumor conference records at Cook County Hospital. Patients were included in the study if they completed either CRT or underwent TL followed by adjuvant radiotherapy (RT) or CRT. Medical charts were reviewed and data was extracted including age, gender, race, primary site, clinical staging, computed tomography (CT) imaging, treatment modality, response to therapy, time to recurrence, and survival. Recurrence was documented by imaging or biopsy. Patients were divided into treatment groups: CRT versus TL as primary therapy. Results: In total, 34 patients were identified who qualified for the study. There were 21 patients with T4 laryngeal/ hypopharyngeal carcinoma with cartilage invasion who completed CRT and 13 patients who underwent TL with postoperative RT or CRT. In the primary CRT group, 16 patients were noted to have a complete clinical response while five patients had persistent disease (two local, three regional). Of 16 patients with complete response, four developed local recurrence over a time period of 140 – 226 days (mean: 177 days). This resulted in a 29% incidence of persistent/recurrent local disease in patients undergoing definitive CRT for T4 laryngeal/hypopharyngeal carcinoma with cartilage invasion. The remaining 12 patients (75%) remained free of local disease (follow-up mean: 249 days). For 13 patients undergoing TL with adjuvant therapy, there were no cases of local recurrence (follow-up mean: 290 days). Conclusions: While this study shows a high complete local response rate (90%) after CRT for patients with T4 laryngeal/hypopharyngeal carcinoma with cartilage invasion, this response was not durable with local persistence and failure reaching 29% in less than one year. Many patients are able to achieve local control with organ preservation therapy despite having...
cartilage invasion; however, close observation following medical therapy is required to identify recurrent disease. In comparison, patients undergoing TL with postoperative RT or CRT demonstrated markedly better local control. For patients with cartilage invasion, a prospective trial comparing response to medical therapy versus surgical therapy in patients with T4 laryngeal carcinoma is needed.

**S021**

DETERMINANTS OF LONG-TERM SPEECH AND SWALLOWING OUTCOMES FOLLOWING CHEMORADIOTHERAPY FOR LOCOREGIONALLY ADVANCED HEAD AND NECK CANCER. K W Mouw, PhD, D J Haraf, MD, K M Stenson, MD, E E Cohen, MD, E Blair, MD, M E Witt, RN MS, E E Vokes, MD, J K Salama, MD; The University of Chicago.

**Purpose:** To identify factors that influence long-term speech and swallowing function in patients treated with induction chemotherapy (IndCT) followed by combined chemoradiotherapy (CRT) for locoregionally advanced head and neck cancer (HNC). Materials and Methods: A cohort of 221 patients was treated with IndCT followed by combined (CRT) for locoregionally advanced HNC between 1995 and 2002 at the University of Chicago. Of the 184 patients not excluded for early death or locoregional failure, 163 (88.6%) were assigned a speaking score of 1-4 at an average of 34.9 months (range=1.5-68) following the completion of treatment, and 166 (90.2%) were assigned a swallowing score of 1-4 at an average of 34.5 months (range=1-76) following completion of treatment. Speaking and swallowing scores are based on the validated McMaster scale for head and neck radiotherapy outcomes, with a score of 1 indicating normal function and higher scores reflecting increasing speech and swallowing morbidity. Results: Patients received one of three radiation therapy (RT) dosing schemes during treatment, and there was a trend towards better speech and swallowing scores with decreasing overall RT doses. Swallowing scores did not vary significantly based on location of the primary site, whereas speaking scores were significantly worse in patients with a larynx or hypopharynx primary site compared to the oral cavity or oropharynx (P<0.001). There was a trend towards better speech and swallowing scores in patients with no evidence of disease following IndCT (P=0.192 for speaking; P=0.068 for swallowing), but this trend did not result in a significant difference in speech or swallowing outcomes in patients based on overall response to treatment. Smoking history was found to influence speaking outcomes, with significantly better speaking scores (P=0.0473) in patients who had never smoked than in patients with a smoking history. However, there was no significant difference in speech and swallowing scores based on alcohol consumption patterns. Finally, patients who were older at the time of diagnosis had significantly worse swallowing outcomes, with the average age at diagnosis of 55.6 years for patients with swallowing scores of 1-2 compared to an average age of diagnosis of 60.9 years for patients with swallowing scores of 3-4 (P=0.0122). Conclusions: Site of the primary tumor and smoking history were found to influence speaking outcomes, whereas age at diagnosis was found to influence swallowing outcomes in patients following treatment for HNC.

**S022**

RESIDUAL DISEASE IN POST-CHEMORADIOThERAPY NECK DISSECTIONS FOR ADVANCED SQUAMOUS CELL CARCINOMA OF THE HEAD AND NECK: DOES IT AFFECT PROGNOSIS? Hillary White, MD, Jeffrey Magnuson, MD; University of Alabama at Birmingham.

**Objectives:** In this study, we examine pathology results and clinical outcomes for patients with advanced head and neck squamous cell carcinoma who underwent post chemoradiation neck dissections. The goal of this study was to correlate pathologic residual disease in post-treatment neck dissection specimens of patients with stage 4 head and neck squamous cell carcinoma with the time to local failure following surgical resection or chemoradiation with overall survival. **Study Design:** Retrospective analysis of a cumulative patient database. **Method:** Medical records of 255 patients with stage IV squamous cell carcinoma of the head and neck who received either radiation or chemoradiation as primary therapy between 2000 and 2005 at our institution were reviewed. A total of 75 patients were selected. This group was then divided into those that had post-treatment neck dissections (n = 34) and those that did not (n = 41). The indications for a post-treatment neck dissection varied and included persistent clinical disease, positive CT scan, or strictly based on pre-treatment nodal stage N2 or greater. For each patient, pre-treatment staging, post-treatment clinical neck status, and survival status at two and five years, as applicable, were recorded. The median follow-up period was 39 months. **Results:** Thirty-four patients with N2 or greater disease treated with primary chemoradiation underwent post-treatment neck dissections. Twenty-four of the 34 neck dissections (70%) demonstrated no evidence of residual carcinoma. Of the nine neck dissections with positive pathology, all revealed malignant cells in a single nodal echelon. One patient’s pathology was unavailable for review. A direct correlation was found between post-treatment residual carcinoma and mortality. Using a Kaplan-Meier Survival Curve, two- and five-year survival of the patients with negative neck dissection pathology was calculated. These values were found to be 95% and 74%, respectively, compared to 67% and 28% in the group with positive pathology. Forty-one patients did not undergo a post-treatment neck dissection. The two and five-year survival of this group, regardless of clinical stage or nodal status, was 89% and 56% in comparison to 86% and 58% for the group that did receive neck dissections. **Conclusion:** Residual carcinoma in the neck after primary chemoradiation treatment can be a useful prognostic marker in patients with advanced head and neck squamous cell carcinoma. Based on this study, positive pathology in a post-treatment neck dissection following primary chemoradiotherapy is correlated with a significant decreased overall survival. We did not find a significant difference in survival between the patients that underwent a post-treatment neck dissection as compared to those that did not.

**S023**

RETROSPECTIVE ANALYSIS OF MINOR SALIVARY GLAND CARCINOMAS OF THE OROPHARYNX AND FACTORS PREDICTIVE OF OUTCOME. N Gopalakrishna Iyer, MD PhD, Leslie Kim, BA, Iain J Nixon, MD, Frank Palmer, BA, Jatin P Shah, MD PhD, Snehal G Patel, MD, Ian Gantly, MD PhD; Memorial Sloan-Kettering Cancer Center.

**Background:** Minor salivary gland cancers of the oropharynx are rare, comprising approximately 1 to 2% of malignancies arising in this site. They represent a heterogenous group with diverse morphologies, tumor biology, and consequently, varied clinical behavior. Surgical resection is the mainstay of primary treatment. However, given the propensity for submucosal growth and relatively inaccessible location, these can be difficult to assess clinically and resect completely. The aim of our study was to report our experience in the management of these patients. **Methods:** Retrospective review of institutional databases identified 64 patients who were treated for minor salivary gland cancers of the oropharynx at Memorial Sloan-Kettering Cancer Center between 1985 and 2005. Overall survival (OS), disease specific survival (DSS), disease free survival (DFS), locoregional recurrence free survival (LRRFS), distant recurrence free survival (DRFS) were calculated by the Kaplan Meier method. The following variables: clinical T status (ct), clinical N status (cn), histology, margin status and anatomic sub-site were assessed by univariate and multivariate analysis for factors predictive of outcome. **Results:** Of the 64 patients, 30 were male and 34 were female. The median age was 61 years (range 18 to 84 years). The most common histologic types were mucoepidermoid carcinoma (MEC) in 25 (39%) patients, adenoid cystic carcinoma (ACC) in 16 (25%) adenocarcinoma in 15 (23%) and malignant mixed tumor in 7 (11%). The tumors were located in the base of tongue in 38 patients (59%), soft palate in 20 (31%) and tonsil in 6 (9%). Follow-up data was available for 61 patients with a median follow-up time of 82 months (range 2 to 249 months). All but four patients were treated with primary surgery; one was considered inoperable and three refused surgery and were treated with primary radiation therapy. Of the 60 patients who had primary surgery; 37 had a concomitant neck dissection and 35 received adjuvant postoperative radiotherapy. Outcomes at 5- and 10-years were; OS- 81% and 53%, DSS- 87% and 68%, DFS- 83% and 77%, DRFS- 79% and 68%, respectively. Tumor recurrence occurred in 23 patients (38%). Loco-regional failure occurred in 12 patients, five with mucoepidermoid carcinoma. There was no nodal recurrence in patients with adenoid cystic carcinoma. Fifteen patients had distant metastases; adenoid cystic carcinomas accounted for almost half of the distant metastases. Interestingly, while 5-year OS was similar for MEC and ACC (78% and 79% respectively), at 10 years survival was significantly worse for ACC (37% versus 68%). This was due to development of distant metastasis in patients with ACC, which
occurred at a median of 69 months after primary treatment. Multivariate analyses show that CT and cN status were significant predictors of OS and DSS, while cN was a significant predictor of LRRFS and DRFS.

Discussion: This retrospective study of patients with minor salivary gland malignancies of the oropharynx is the largest series reported from a single institution. Patients have a more favorable outcome compared to patients with squamous cell cancer. Distant metastases were common and were the most common cause of treatment failure.

S024
THE INCIDENCE AND OUTCOME OF HEAD AND NECK SQUAMOUS CELL CARCINOMA PATIENTS WITH SUSPICIOUS PULMONARY FINDINGS ON PET/CT. Steven Shinn, Bradley A Schiff, MD, Janine Feng, MD, Keivan Shifteh, MD, Missak Haigentz, MD, Madhur Garg, MD, Richard Smith, MD; Albert Einstein College of Medicine.

Purpose: Several studies in the past decade cite the utility of FDG-PET/CT for detection of pulmonary metastases and second primary malignancies in patients with head and neck cancers. However, there are few studies in the literature tracking the long-term outcomes of patients with pulmonary malignancies discovered with PET/CT. The aim of this study is to evaluate the long-term outcomes and survival of patients with head and neck squamous cell carcinomas who present with suspicious pulmonary findings on FDG-PET/CT.

Methods: Between January 2005 and May 2009, 663 different head and neck cancer patients were presented at weekly Tumor Boards in the Department of Otolaryngology – Head and Neck Surgery, of which 433 patients received PET/CT scans. Results: FDG-PET/CT revealed pulmonary findings in 204 patients with head and neck squamous cell carcinoma (HNSCC). After excluding patients with dermal primary lesions, and those with primary lung tumors, 191 patients were analyzed. Of those 191 patients, 74 had positive findings suspicious for pulmonary metastases and/or second primary malignancies; 23 of these patients subsequently had histological confirmation of their malignancy. Additionally, PET/CT pulmonary findings were equivocal for 27 patients, of which 1 patient was confirmed pathologically positive via lung biopsy. Overall, the prevalence of biopsy-confirmed lung malignancy, metastases or second primary, was 24/433 (5.5%). Among the patients with (+) PET/CT scans treatment plans were altered in 18/74 patients (24%). Furthermore, of the 23 biopsy confirmed patients with (+) PET scans, 12/23 (52%) patients had their therapeutic regimen changed to include curative resection of the lung malignancy, palliative radiation, or chemotherapy. The median interval of time between a (+) PET/CT and the positive lung biopsy was 81.5 days. The median overall survival following a (+) PET/CT and (+) pulmonary diagnosis was 370 and 247 days, respectively. The median time interval between the definitive therapy for HNSCC and a (+) PET/CT was 314 days. The survival percentages following their first (+) PET/CT at 6 months, 1 year, and 2 years were 82% (19/23), 55% (9/17), and 33% (2/6), respectively. Conclusion: PET/CT scans play an increasingly significant role in the management and surveillance of patients with HNSCC. Approximately 17% (74/433) of PET scans revealed pulmonary findings suspicious for malignancy. Of patients with findings suspicious for malignancy the median survival was less than one year. Patients with suspicious pulmonary findings on PET/CT have a poor prognosis. However, a subset of these patients are amenable to treatment and may still achieve long term survival.

S025
INDUCTION CHEMOTHERAPY FOR ADVANCED SQUAMOUS CELL CARCINOMA OF THE PARANASAL SINUSES. Ehab Y Hanna, MD, M Kupferman, MD, R Weber, MD, M Kies, MD; MD Anderson Cancer Center.

Purpose/Objective(s): To review the outcomes of patients with advanced (stage III-IV) squamous cell carcinoma (SCC) of the paranasal sinuses treated with induction chemotheraphy prior to definitive local therapy.

Materials/Methods: Forty six consecutive patients with previously untreated biopsy proven SCC of the paranasal sinuses who received induction chemotherapy during the course of their treatment were reviewed for demographics, tumor types and stage, treatment details and oncologic outcomes. Results: Of the 46 patients, the tumor epicenter was in the maxillary sinus in 31 (67%), ethmoid sinus in 9 (20%), nasal cavity in 4 (9%), and sphenoid sinus in 2 (4%). All patients had T3 or T4 tumors, and 28% of patients had clinical evidence of nodal metastasis with an overall stage of III (20%) or IV (80%). Median age was 59 years. Induction chemotherapy regimens consisted of a combination of taxane and platinum in 80% of patients, either alone (14 patients), or in combination with a third agent such as ifosfamide (14 patients) or 5-FU (9 patients). The combination of taxane and 5-FU was used in the remaining 9 patients. Two thirds of patients (67%) achieved at least a partial response to induction chemotherapy, 24% had progressive disease, and 9% had stable disease. Subsequent treatment after induction chemotherapy consisted of either surgery usually followed by radiation or chemoradiation, or definitive radiation or chemoradiation with surgical salvage of any residual disease. Overall surgical resection was performed in only 50% of patients treated with induction chemotherapy. The 2-year survival for patients with at least a partial response or stable disease after induction chemotherapy was 77%, in contrast to only 36% for patients with progressive disease.

Conclusions: Tumor response to induction chemotherapy in patients with advanced SCC of the paranasal sinuses may be predictive of treatment outcome and prognosis. Favorable response to induction chemotherapy is associated with better survival and a reasonable chance of organ preservation.

S026
CD40 IS REQUIRED FOR AN IMMUNE MEDIATED CLEARANCE OF HPV POSITIVE HEAD AND NECK CANCER. William C Spanos, MD, Denise Schwabauer, MS, Daniel W Vermeer, BA, Annie Herrig, BS, John H Lee, MD; Sanford Research/USD, Sioux Falls, SD, USA.

Human papilloma virus (HPV) cancers have improved survival following therapy compared to their HPV negative counterparts. Our preliminary data suggests that treatment with cisplatin and radiation induce an immune response that aids in clearing HPV positive cancers. To better understand this immune related clearance we have examined cellular signaling present on head and neck epithelial cells that may aid in the immune response. Cellular signals, such as the presence or absence of receptors on immune cells or epithelial cells may be important to tumor clearance. CD40 receptor, a membrane glycoprotein, is found on dendritic cells as well as epithelial cells lining the oropharynx and nasopharynx. The interaction of CD40 receptor to CD40 ligand is important in driving the immune system to a T cell response. An activating CD40 antibody (CD40 ligand) has been used in the treatment of solid tumors (melanoma and colorectal). Using a mouse model of HPV positive head and neck cancer we have investigated the role of CD40 in head and neck cancer. Mouse tonsil epithelial cells (MTECs) transformed with HPV E6/E7 and H-Ras (oncogenes) as well as human HPV positive and negative head and neck squamous cell cancer (HNSCC) cell lines showed no growth inhibition and no decreased clonogenic survival when treated with the activating antibody CD40 ligand alone. CD40 receptor activation on the epithelial cells showed no growth inhibition and no decreased clonogenic survival when treated with the activating antibody CD40 ligand compared to IgG control. This suggests that receptor activation on the epithelial cells does not induce cell death. To test whether CD40 receptor was essential for the induced immune response, HPV positive tumors were implanted into CD40 knockout, RAG-1 and wild-type mice. Interestingly CD40 knockout mice grew with similar velocity to immunodeficient RAG-1 mice (no B and T cells) with 0% survival despite treatment with cisplatin and radiation, while 80% of wild-type mice cleared their tumors. CD40 receptor activation as an adjuvant to cisplatin/radiation treatment of HPV positive tumors in immune competent C57BL mice improved survival by 20% compared to IgG cisplatin/radiation control. Complete clearance with tumor free survival occurred in 10% of mice treated with CD40 ligand alone. CD40 receptor is a important component of the immune mediated clearance of HPV positive HNSCC in mice. Augmentation of the immune response using CD40 ligand may allow for dose reductions of chemotherapy and/or radiation in the treatment of head and neck cancer.

S027
VASCULAR ENDOTHELIAL GROWTH FACTOR C (VEGF-C) IS IMPORTANT IN THE DEVELOPMENT AND METASTASIS OF HEAD AND NECK SQUAMOUS CELL CARCINOMA. Rachel L Chard, BA, Hiroshi Yagi, MD PhD, Vyomesh Patel, MD, Alfredo Molinolo, MD PhD, J. Silvio Gutkind, PhD; Oral and Pharyngeal Cancer Branch, National Institute of Dental and Craniofacial Research, National Institutes of Health, and Oregon Health & Science University School of Medicine. Head and neck squamous cell carcinomas (HNSCC) rank sixth among...
the most common cancers worldwide. Though advances in prevention and treatment have increased survival rates in other cancers, the 5-year survival rate for HNSCC patients, approximately 50%, has remained virtually unchanged for more than 30 years. In search of molecules with potential therapeutic benefit, we have conducted a comprehensive genomic and proteomic analysis of laser capture microdissected cancer and stromal cells from a large HNSCC frozen tumor collection from patients of distinct metastatic status. We observed that the expression of Vascular Endothelial Growth Factor C (VEGF-C) is a prominent feature in the most metastatic HNSCC lesions. VEGF-C is a member of VEGF family of growth factors and is most strongly identified with the process of lymphangiogenesis, or the growth and proliferation of the lymphatic vasculature. This observation prompted us to focus on the dysregulation of the lymphangiogenesis pathways in HNSCC. We have established rapid orthotopic models of HNSCC invasion in the tongue and intra-vital imaging approaches to monitor the process in live animals and, thus, are uniquely able to address the role of VEGF-C in the HNSCC metastasis. Using a lentiviral delivery system, we used two unique sequences of shRNA against VEGF-C to knockdown its release in OSCC3, a well-characterized cell line of high metastatic potential. We then injected these cells into SCID/Nod mice using our validated model of HNSCC metastasis, observing differences in tumor volume, metastasis and vasculature density. In parallel, we characterized the effects of VEGF-C secreted by OSCC3 control and VEGF-C knockdown cells on the ability of lymphatic endothelial cells to proliferate and migrate. We aim to demonstrate that the release of VEGF-C by tumor cells is important for the process of lymphatic metastasis and VEGF-C signaling should be further investigated as a therapeutic target in HNSCC.

**S028**

**SIGNIFICANCE OF CIRCULATING TUMOR CELLS IN PATIENTS WITH SQUAMOUS CELL CARCINOMA OF THE HEAD AND NECK.**

Kris R Jatana, MD, Priya Balasubramanian, MS, Jas C Lang, PhD, Lijing Yang, PhD, Courtney A Jatana, DDS, Elisabeth White, BA, David E Schuller, MD, Theodores N Teknos, MD, Amit Agrawal, MD, Enver Ozer, MD, Jeffrey J Chalmers, PhD; The Ohio State University, Arthur G. James Cancer Hospital and Solove Research Institute.

**Objective:** 1) To present and discuss a high performance negative depletion methodology for the isolation of circulating tumor cells (CTCs) in the blood of patients with squamous cell carcinoma of the head and neck (SCCHN). 2) To begin to determine the correlation between the presence of CTCs and clinical outcome in SCCHN patients.

**Design:** Prospective clinical follow-up study of SCCHN patients undergoing surgical intervention, who had peripheral blood tested for the presence CTCs using a negative depletion technique.

**Subjects:** 30 patients diagnosed with SCCHN.

**Intervention:** A negative depletion technique was used to isolate and quantify CTCs from the blood of patients with SCCHN, using immunomagnetic separation was developed and validated. To date, this technique was performed on over 100 blood samples taken from patients at the time of surgery, and these patients have been followed in a prospective manner. Immunostaining for cytokeratin was performed on the enriched samples to determine the number of CTCs extracted from each patient’s blood sample. In addition, RNA was extracted from these enriched samples, and RT-PCR was used to determine if mRNA from EGFR was present. Correlation of CTCs, tumor stage, and tumor status, EGFR status, and clinical outcome was made.

**Outcome Measure:** Disease-free survival.

**Results:** For the initial 30 patients, our data suggests that SCCHN patients with no detectable CTCs per mL of blood had a statistically significant higher probability of disease-free survival (p=0.03, mean follow-up=18 months). No CTCs were found in healthy control blood samples. EGFR expression was present in 62% of SCCHN patients with identifiable CTCs. In addition to cytokeratin markers, ongoing studies focus on using multicolor Conflon microscopy to investigate the expression of other markers including “cancer stem cell” markers.

**Conclusions:** An enrichment technology, based on the removal of normal cells, has been used on the peripheral blood of SCCHN patients for which outcome data is being collected. The data at this point indicates that this detection technology is potentially sensitive and specific enough to predict that if no CTCs were present, SCCHN patients had improved disease-free survival. A blood test with such a prognostic capability could have important implications in the management of SCCHN.

**S029**

**ENHANCED INVASIVE AND METASTATIC POTENTIAL OF CANCER STEM CELLS IN HEAD AND NECK SQUAMOUS CELL CARCINOMA.**

Samantha J Davis, BS, Vasu Divi, MD, John H Owen, BA, Silvania Papagerakis, MD PhD, Carol R Bradford, MD, Thomas E Carey, PhD, Mark E Prince, MD; Department of Otorhinolaryngology, University of Michigan, Ann Arbor, MI; Massachusetts Eye and Ear Infirmary/Harvard Medical School, Boston, MA.

**Objectives:** Subpopulations of highly tumorigenic cells, or cancer stem cells (CSCs), have been identified within tumors of many types. These cells have the unique capacity to self-renew and produce differentiated progeny. In head and neck squamous cell carcinomas (HNSCC), the CSC population is contained within the cell fraction that expresses high levels of the surface molecule CD44. Although HNSCC CSCs are known to exhibit increased tumorigenicity compared to non-CSCs, it is unknown what role they may play in local invasion and distant metastasis. To explore this, we have designed both in vitro and in vivo models to study the behavior of this unique tumor cell subpopulation.

**Methods:** In all experiments, cells were labeled with anti-CD44 monoclonal antibody and sorted for CD44+ and CD44- fractions using flow cytometry. For in vitro studies, cells from three HNSCC cell lines (UMSCC-12, -14A, and -47) were serum-starved in media containing 1% FBS for 18 hours prior to sorting. The CD44+ and CD44- populations were plated in the upper chambers of Matrigel-coated inserts. CD44- depleted CD44+ and CD44- cells from one primary tumor (HN-111) and one cell line (UMSCC-6) were injected into the tail veins of NOD/SCID mice. Lungs were harvested at six months to evaluate for the presence of metastasis.

**Results:** In all three HNSCC cell lines, CD44+ cells were more invasive than CD44- cells. The increase in invasiveness ranged from 1.2 to 2.1-fold. UMSCC-12, a laryngeal SCC cell line, showed the greatest difference in invasion between the two populations. UMSCC-47, an HPV-positive tongue SCC cell line, showed an intermediate increase, while the floor-of-mouth SCC cell line UMSCC-14A showed the smallest increase in percent invasion (see Table 1). Three out of four mice injected with CD44+ cells and 0/4 mice injected with CD44- cells formed lung metastasis. Two of the metastasis arose from primary tumor CSCs injections and one from HNSCC cell line CSCs injections (see Table 2).

**Conclusions:** An in vitro model of invasion and an in vivo model of metastasis to compare behavior of CD44+ and CD44- cells support the hypothesis that CSCs have the unique capacity for progression of disease outside the primary tumor bed. Interestingly, CD44+ cells not only have greater ability to invade through reconstituted basement membrane, but they also migrate more efficiently through the control inserts. This phenomenon could be due to enhanced general mobility of CSCs compared to the general tumor population.

---

**Table S029-1:** CD44+ and CD44- cells from primary (HN111) and a UMSCC6 cell line (UMSCC6) were labeled with anti-CD44 and anti-CD44 monoclonal antibodies before injection to mark positive and negative cells, respectively. CD44+ and CD44- cells were injected into the tail veins of NOD/SCID mice. Lungs were harvested 6 months after injection to determine the number of metastasis. CD44+ and CD44- cells were labeled using anti-CD44 antibodies. CD44+ and CD44- cells were sorted using flow cytometry and analyzed for the presence of metastasis.

<table>
<thead>
<tr>
<th>Cell Line</th>
<th>CD44+</th>
<th>CD44-</th>
</tr>
</thead>
<tbody>
<tr>
<td>HN-111</td>
<td>0/4</td>
<td>0/4</td>
</tr>
<tr>
<td>UMSCC-6</td>
<td>0/4</td>
<td>0/4</td>
</tr>
</tbody>
</table>

**Table S029-2:** CD44+ and CD44- cells from primary (HN111) and a UMSCC6 cell line (UMSCC6) were labeled with anti-CD44 and anti-CD44 monoclonal antibodies before injection to mark positive and negative cells, respectively. CD44+ and CD44- cells were injected into the tail veins of NOD/SCID mice. Lungs were harvested 6 months after injection to determine the number of metastasis. CD44+ and CD44- cells were labeled using anti-CD44 antibodies. CD44+ and CD44- cells were sorted using flow cytometry and analyzed for the presence of metastasis.

<table>
<thead>
<tr>
<th>Cell Line</th>
<th>CD44+</th>
<th>CD44-</th>
</tr>
</thead>
<tbody>
<tr>
<td>HN-111</td>
<td>0/4</td>
<td>0/4</td>
</tr>
<tr>
<td>UMSCC-6</td>
<td>0/4</td>
<td>0/4</td>
</tr>
</tbody>
</table>
S030
RETROSPECTIVE ANALYSIS OF OUTCOME IN PATIENTS WITH ORAL PREMALIGNANT LESIONS: THE RISK FOR ORAL CANCER DEVELOPMENT. Vanda M Stepanek, MD PhD, Dianna B Roberts, PhD, Adel K El-Naggar, MD PhD, Martin W Jack, DDS MS, Vassiliki Papadimitrioukouloou, MD, Ann M Gillenwater, MD; MD Anderson Cancer Center.
Background: Patients with clinically apparent oral lesions such as leukoplakia and erythroplakia, and those with pathological findings of dysplasia are at increased risk to develop oral cancer. However, the reported rates of malignant transformation in different series varies greatly (from 1 to 37%) depending upon variables such as geographic location, length of follow up and prevalence of high risk behaviors such as tobacco use. This makes it difficult to predict an individual patient’s risk for oral cancer development rendering management of patients with oral premalignant lesions (OPLs) extremely challenging.
Objective: To evaluate a large cohort of patients with OPLs in the United States in order to determine rate of oral cancer development and to identify correlations of clinical, pathologic, and demographic data with malignant transformation. Methods: Medical records of patients diagnosed with an OPL (oral leukoplakia or erythroplakia) between 1970 and 2007 with a minimum follow up period of 12 months were retrospectively reviewed. Clinical and demographic data were recorded and histopathological assessments of biopsied tissues were reviewed. Correlations between parameters of interest were assessed by the Pearson chi-square test and, where appropriate, by the 2-tailed Fisher exact test. Results: A total of 305 patients with OPLs whose records met criteria for further evaluation were identified. 164 patients (53.8%) had multiple OPLs; anatomic subites involved included tongue (45.6%), buccal (16.0%), gingival (13.0%) and the floor of mouth (10.3%). The median age of the patient cohort was 55 years, (range 23-90 years) with a male: female ratio of 154:151. 89.5% were Caucasian. 31.6% were patients with leukoplakia and erythroplakia, and those with pathologic findings of dysplasia are at increased risk to develop oral cancer. However, the reported rates of malignant transformation in different series varies greatly (from 1 to 37%) depending upon variables such as geographic location, length of follow up and prevalence of high risk behaviors such as tobacco use. This makes it difficult to predict an individual patient’s risk for oral cancer development rendering management of patients with oral premalignant lesions (OPLs) extremely challenging.

S031
FLUORESCENT SPECTROSCOPY FOR NON-INVASIVE EARLY DIAGNOSIS OF ORAL MUCOSAL MALIGNANT AND POTENTIAL MALIGNANT LESIONS. Pankaj Chaturvedi, FACS FAIS FICS NAMS, Pradeep K Gupta, Shovan Majumdar; Tata Memorial Hospita, Mumbai and Center for Advanced Technology, Indore.
Objectives: To validate the potential role of fluorescent spectroscopy in non-invasive early diagnosis of oral mucosal malignant and potential malignant lesions in a country with high prevalence of oral cancers. Methods: Patients visiting our hospital with oral mucosal malignant and potential malignant lesions underwent clinical examination, spectroscopic examination and biopsy. The spectroscopy was done using Laser induced fluorescence on abnormal mucosa in addition to other clinically normal looking sites like lip, vermilion, buccal mucosa, tongue, hard and soft palate. The resulting data was analyzed statistically. Results: There were 299 cases of biopsy proven oral cancer with 267 healthy volunteers as controls. In detecting oral cancer this device had a sensitivity of 78.6%, specificity of 83.9%. The positive and negative predictive values were 84.2% and 77.5% respectively. When leukoplakia (90 cases) and submucous fibrosis (88 cases) were compared with normal subjects (267 cases) the sensitivity, specificity, positive predictive value and negative predictive values were 83.2%, 87.3 %,

S032
ORAL SQUAMOUS CELL CARCINOMA: PREDICTING PROGNOSIS FOLLOWING RECURRENCE. Michael Kernohan, Dr, Jonathan Clark, Dr, Kan Gao, Mr, Ceri Hughes, Dr, Ardalan Ebrahimi, Dr; Sydney Head and Neck Cancer Institute.
When patients present with local or regional recurrence the decision to treat further is based on the risk of morbidity balanced against benefit. When locoregional recurrences occur they do so within the first 2 years in 80% of cases. The aim of this study is to identify the clinical or pathological factors that predict the prognosis of patients with recurrent oral SCC. In particular, we sought to determine whether time to recurrence (TTR) was an important predictor when adjusted for other parameters. Prognostic information would be advantageous to counselling and treatment planning in this difficult scenario. Methods: Patients from the Sydney Head and Neck Cancer database were included in the study if they had a first recurrence of squamous cell carcinoma of the oral cavity, were treated with curative intent and had a minimum of 12 months of documented follow up. Patients were excluded if they had distant metastases at the time of recurrence. A total of 117 patients were included. Treatment at initial presentation was carried out by surgery alone (56/117), surgery with postoperative radiotherapy (51/117) or radiotherapy alone (6/117). Chemotherapy was added in 8/117 patients. A total of 10 clinical and pathological prognostic factors were examined. Statistical Analysis: Disease specific survival (DSS) was calculated from time of recurrence to death with disease using the Kaplan Meier method. Univariate comparisons were performed using the Log rank test. Variables with a p value < 0.1 on univariate analysis were included in the initial multivariable model. Multivaviable analysis was performed using a stepwise backwards Cox excluding variables with a p value > 0.05. Continuous variables were appropriately transformed to maintain linearity and potential interactions were examined. Results: The disease specific survival rate for the entire cohort at 5 years following salvage for recurrence was 28%. The most significant variables were; initial treatment modality (single or combined), site of recurrence (local or regional), TTR (t < 12 months or > 12 months) and clinical T-stage. These variables proceeded to multivariate analysis. TTR was also examined as a continuous variable with a log transformation. There is strong evidence that decreasing TTR is associated with reduced survival (p = 0.007). Hazard ratios associated with TTR and site of recurrence are dynamic with a significant interaction between TTR and site of recurrence (p = 0.009) (Graph 1). Therefore in those patients who recur early (< 6 months) worse outcomes are associated with primary site recurrence compared to those who recur in the neck. In contrast for those patients who recur late (> 6 months) worse outcomes are associated with regional recurrence.

Graph 1

Cox Regression with Interaction
Site of Recurrence and Time to Recurrence
Conclusions: This retrospective study provides new information on survival prediction for these patients and demonstrates the interaction of clinically relevant prognostic factors that reflect variation in disease biology and behavior. This data and unique analysis has identified the following as independent prognostic variables: Time to recurrence; Initial treatment modality, single or combined; Site of failure, local or regional. The relationship of these variables is not fixed as they have a dynamic interaction.

S033
TARGETING A TREATMENT-RESISTANT, MESENCHYMAL-LIKE SUBPOPULATION WITHIN HEAD AND NECK SQUAMOUS CELL CARCINOMAS. Devraj Basu, MD PhD, Thierry-Thien K Nguyen, MS, Kathleen T Montone, MD, Anil K Rustgi, MD, Min Xiao, MS, Gregory S Weinstein, MD, Meenhard Hertlyn, DVM DSc; The University Of Pennsylvania, Philadelphia VA Medical Center, The Wistar Institute.

A barrier to effective therapy for head and neck squamous cell carcinoma (HNSCC) is intrinsic drug resistance within discrete subpopulations among heterogeneous phenotypes present in a given tumor. We have previously identified a subpopulation that arises from epithelial to mesenchymal transition in vitro and in vivo in HNSCCs. This mesenchymal-like subset is resistant both conventional and epidermal growth factor receptor-targeted chemotherapies in comparison to the majority of malignant cells with predominantly epithelial differentiation. Coexistence of these dual phenotypes in vivo underscores the need to target both malignant populations to achieve tumor eradication. High throughput drug screening has recently identified the potassium ionophore compound salinomycin as effective against breast carcinoma cells with mesenchymal-like features. Here we evaluate whether salinomycin possesses enhanced activity against mesenchymal-like subsets within HNSCCs, relative to the widely used conventional cytotoxic agent cisplatin. Low concentrations of salinomycin inhibited growth and induced apoptosis of the mesenchymal-like subpopulation expressing low E-cadherin (Ecad-lo) and high vimentin, while the same subset showed resistance to cisplatin. Cisplatin treatment enriched the Ecad-lo subset in vitro among surviving HNSCC cells, while salinomycin effectively depleted this subpopulation, decreasing percentage of residual cells with the mesenchymal-like phenotype. Mesenchymal-like cells surviving salinomycin exposure showed diminished growth potential, contrasting with unaffected growth of Ecad-lo cells surviving cisplatin treatment. In vivo salinomycin treatment of a mouse xenograft derived from an HNSCC clinical sample arrested tumor growth without leading to the enrichment of mesenchymal-like cells seen with conventional agents. Overall these results suggest that salinomycin has activity against mesenchymal-like subpopulations across multiple types of carcinomas. They further provide proof of concept that minority subpopulations possessing intrinsic drug resistance within HNSCCs may be approached with distinct pharmacologic targeting strategies.

S034
INTRAVASCULAR HUMAN SALIVARY CELL DELIVERY TO TREAT SALIVARY CELL LOSS IN A RODENT MODEL. Millie Surati, MD, Seth Purcell, Shay Soker, PhD, Tamer AbouShwareb, MS MD PhD, James J Yoo, MD PhD, Christopher A Sullivan, MD; Department of Otolaryngology-Head and Neck Surgery, Wake Forest University School of Medicine; Wake Forest Institute for Regenerative Medicine, Winston-Salem, NC USA.

Objective: Radiation therapy for head and neck cancer causes salivary gland cell loss and hypofunction. No cure exists for this condition. Replacement of lost salivary cells with a patient’s own cells could provide a physiologic solution to this problem. We aimed to determine the feasibility of therapeutic human salivary cell replacement using a novel intravascular cell delivery (IVCD) system in a rat model of salivary cell loss. Methods: Human submandibular gland (SMG) cells were explanted from tissue, expanded in culture, and evaluated for phenotypic and functional markers. Cultured cells were labeled with PKH-67 and suspended in complete medium. Three (3) male Sprague-Dawley rats underwent ligation of the right SMG. At 10 weeks, one (1) ligated rat SMG was harvested for histologic control. Normal rat SMG was used for comparison to ligated glands. The other two (2) rats underwent carotid artery catheterization and IVCD into the submandibular artery (1 million and 100,000 cells respectively). SMGs were harvested after 24 hours. Histological assessment and cell characterization were performed. Radiated human SMG tissue was harvested during neck dissection, and histology was compared to ligated rat SMGs. Results: Cultured human SMG cells expressed functional markers at all passages. Ligated rat SMGs showed a decellularized tissue matrix comparable to human radiated salivary tissue. In IVCD specimens, PKH-67-labeled cells were widely dispersed in tissue; human phenotype and functional cell markers were identified in all IVCD cells. Conclusions: A rat SMG duct ligation model of cell loss achieves a picture that is histologically indistinguishable from irradiated human SMG glands. Directed IVCD to a damaged rat SMG delivers a full complement of functional human salivary cells that leave the intravascular space and are dispersed throughout a vascularized, decellularized target organ. Further study of salivary IVCD is warranted in an animal model of salivary hypofunction.

S035
SENSITIZATION OF HEAD AND NECK CANCER TO CISPLATIN THROUGH THE INHIBITION OF STAT3. Waleed M Abuzeid, MD, Samantha Davis, BS, Alice Tang, BS, Lindsay Saunders, BS, Jiayuh Lin, PhD, James R Fuchs, PhD, Carol R Bradford, MD, Thomas E Carey, PhD; University of Michigan and The Ohio State University.

Objectives: Future advances in the treatment of cancer will involve disruption of the key molecules involved in tumor growth. Signal transducer and activator of transcription (STAT) proteins regulate key cellular fate decisions including differentiation, proliferation and apoptosis. STAT3, in particular, is a key mediator of oncogenic signaling. Over-expression of STAT3 induces tumor growth through up-regulation of downstream apoptosis inhibitors, facilitation of cell cycle progression and promotion of angiogenesis. STAT3 is activated in 82% of human head and neck squamous cell carcinomas (HNSCC). We hypothesized that targeted inhibition of STAT3 with a novel small molecule inhibitor (FLLL32) would induce marked cytotoxicity in HNSCC cells when used as a monotherapy and would also sensitize tumors to cisplatin chemotherapy. Methods: Western blot was used to determine STAT3 expression in two HNSCC cell lines, UM-SCC-29 and -74B, and to confirm FLLL32-induced knock-down of STAT3. The LD50 for FLLL32 was determined for each cell line using cell proliferation assays. UM-SCC-29 cells were divided into 11 groups: no treatment controls, cisplatin monotherapy at doses of 25, 12.5, 6.25, 3.125 µM, monotherapy with FLLL32 (LD50 dose), combination therapy of FLLL32 (LD50) with cisplatin at doses of 25, 12.5, 6.25, 3.125 and 1.562 µM. Cell proliferation was then assessed by 3 day MTT assay. Results: Both the UM-SCC-29 and -74B cell lines express STAT3 protein. Protein levels were significantly reduced in both cell lines following treatment with FLLL32. In UM-SCC-29, cisplatin monotherapy over 72 hours suppresses cell growth by 51%, 46%, 42% and 39% at 25, 12.5, 6.25 and 3.125 µM, respectively (p<0.001 vs. control). FLLL32 monotherapy suppressed growth by 36% (p<0.001 vs. control). Combining FLLL32 with cisplatin induced growth suppression of 50%, 48%, 47%, 43% and 39% at cisplatin doses of 25, 12.5, 6.25, 3.125 and 1.5625 µM, respectively (p<0.001 vs. control). FLLL32 induces an equivalent tumor kill with a four-fold lower dose of cisplatin relative to cisplatin monotherapy (FLLL32 + cisplatin 1.5625 µM vs. cisplatin 6.25 µM; p<0.03). Conclusions: FLLL32-mediated STAT3 inhibition induces a potent anti-tumor effect when the inhibitor is used as monotherapy. Additionally, FLLL32 is able to sensitize cancer cells to low dose cisplatin, permitting increased anti-tumor effect at lower and less toxic doses of cisplatin to achieve an equivalent or enhanced anti-tumor effect. Ongoing in vitro experiments will explore the mechanism of this effect in cisplatin resistant and cisplatin sensitive cell lines. In vivo studies are planned to translate these exciting findings to a murine HNSCC xenograft model.

S036
DECISION MAKING FOR THE EXTENT OF THYROIDECTOMY IN PATIENTS WITH ATYPICAL CYTOLOGY. Manish D Shah, MD MPhil FRCS; Andrew Conrad, Aaadil Ahmed, Spiro Eskri, MD, Christina MacMillan, MD, Jeremy L Freeman, MD FRCS FACS; Mount Sinai Hospital, University of Toronto.

Background & Objective: In a previous report from our centre, the overall incidence of papillary thyroid carcinoma in patients with a fine-needle aspiration biopsy (FNAB) showing cellular atypia was 56%.

www.ahns.info
The objective of this study was to identify additional pre-operative factors that could reliably be used to aid in determining the appropriate extent of thyroidectomy. **Design:** Retrospective chart review. **Setting:** Tertiary-care academic hospital. **Patients:** 200 consecutively treated patients who underwent thyroid surgery after having a FNAB at Mount Sinai Hospital that met the criteria for atypical cytology (corresponds to “follicular lesion / atypia of undetermined significance,” 2007 NCI guidelines). **Main Outcome Measures:** Malignant versus benign final histopathological diagnosis. **Results:** The final diagnosis was benign in 42.5% of patients and malignant in 57.5%. The presence of microcalcifications within the nodule on ultrasound (US) was significantly associated with a higher risk of malignancy (RR=1.31, p=0.04). When examined individually, age, sex, family history of thyroid malignancy, exposure to head and neck irradiation, nodule size, rim enhancement on US, and intranodular vascularity on US were not significantly associated with an increased risk of malignancy. Multivariate stepwise logistic regression was used to identify a model that could reliably predict a higher probability of malignancy. The final model determined that patients with microcalcifications on US and a nodule greater than or equal to 2.0cm in size had a 7.4% risk of malignancy, 47.5% risk in patients with no microcalcifications and a nodule smaller than 2.0cm. This difference was statistically significant. **Conclusions:** Microcalcifications and nodule size can be used to risk stratify patients with an atypical FNAB result and aid in determining the appropriate extent of thyroidectomy.

**S038**

**VOLUME-BASED TRENDS IN THYROID SURGERY.** Christine G. Gourin, MD, Robert E Bristow, MD, Ralph P Tufano, MD, Arlene A Forastiere, MD, Wayne M Koch, MD, Timothy M Pawlik, MD; Johns Hopkins Medical Institutions.

**Objective:** Positive volume-outcome relationships exist for diseases treated with technically complex surgery, including thyroid surgery. However, contemporary patterns of thyroid surgery are poorly defined.

**Methods:** The Maryland Health Service Cost Review Commission database was queried for hospital and surgeon thyroid surgical case volumes from 1990-2009. **Results:** Overall, 21,351 thyroid surgeries were performed by 1,034 surgeons at 51 hospitals. Surgical cases increased from 9,459 in 1990-1999 to 11,892 in 2000-2009. The proportion of cases performed by high-volume surgeons increased from 15.8% in 1990-1999 to 31.0% in 2000-2009 (OR=1.96, P<0.001), while cases performed by low-volume surgeons decreased from 36.9% to 20.4%. Cases performed at high-volume hospitals increased from 11.9% to 22.8% (OR=3.11, P<0.001), while cases performed at low-volume hospitals decreased from 36.9% to 20.4%. High-volume surgeons were more likely to perform total thyroidectomy (OR=2.10, P<0.001) and less likely to perform surgery for thyroid cancer (OR=0.86, P=0.002). Analysis of the subset of thyroid cancer surgical cases demonstrated an increase in the proportion of cases performed by high-volume surgeons from 20.9% in 1990-1999 to 36.8% in 2000-2009 (OR=3.56, P<0.001), while thyroid cancer cases performed by low-volume surgeons decreased from 35.4% to 17.5%. The proportion of thyroid cancer cases performed at high-volume hospitals increased from 19.5% to 33.5% (OR=3.35, P<0.001), while thyroid cancer cases performed at low-volume hospitals decreased from 30.7% to 14.9%. After controlling for other variables, thyroid surgery in 2000-2009 was associated with high-volume surgeons (OR=1.59, P<0.001), high-volume hospitals (OR=1.65, P<0.001), total thyroidectomy (OR=3.46, P<0.001), and neck dissection (OR=2.28, P<0.001) but was less likely to be performed at a university hospital (OR=0.73, P<0.001) and for cancer (OR=0.88, P<0.001). **Conclusions:** The proportion of thyroid surgery patients treated by high-volume surgeons and hospitals increased significantly from 1990-1999 to 2000-2009, with an increase in total thyroidectomy and neck dissection. Thyroid cancer surgery was less likely to be performed by high-volume surgeons and in 2000-2009, despite an increase in surgical cases. Further investigation is needed to identify factors contributing to this trend.

**S039**

**PROPHYLACTIC CENTRAL LYMPH NODE DISSECTION FOR CLINICALLY NODE-NEGATIVE PAPILLARY THYROID MICROCARCINOMA: ITS IMPACT ON POSTOPERATIVE THYROGLOBULIN LEVEL, RECURRENCES AND COMPLICATIONS.** Yoon Kyoung So, MD, Young-Ik Son, MD, Min Young Seo, MD, Gi Jun Lee, MD, Sang Duk Hong, MD Inje; University Paik Hospital, Samsung Medical Center.

**Background:** Prognostic benefit of prophylactic central lymph node dissection (CLND) for papillary thyroid microcarcinoma (PTMC) has been debated. However, there have been few studies that reported benefit and risk from prophylactic CLND in detail. We aimed to investigate the impact of prophylactic CLND on postoperative thyroglobulin levels, recurrences and complications. **Methods:** This study included 232 patients who underwent total thyroidectomy (TT) alone or TT in conjunction with prophylactic CLND (TT+CLND) for clinically node-negative PTMC from 1999 to 2006. We compared postoperative thyroglobulin levels, recurrence rates and complications after TT and TT+CLND. **Results:** Subclinical LNM was detected for 44 of 119 patients (37.0%) in the TT+CLND group. Stimulated thyroglobulin level before 1st radioactive iodine (RAI) treatment was significantly lower in the TT+CLND group than in the TT group (1.07 vs. 2.24 ng/mL, P = 0.022). However, stimulated...
thryoglobulin level after first RAI treatment (2nd stimulated Tg) in the TT+CLND group was not different from that in the TT group (P = 0.341). Also, the 3-year locoregional control rates of the TT+CLND group was not different from that of the TT group (P = 0.368). Complication rates in the TT+CLND group were slightly higher than in the TT group, without statistical significance (P > 0.05). **Conclusions:** Prophylactic CLND could effectively clear the subclinical LNM in central neck and reduce postoperative thyroglobulin level without significant increase of complications. However, prophylactic CLND had little prognostic benefit, particularly for patients with RAI treatment.

**S040**

**ROUTINE PARATHYROID LOCALIZATION WITH 4-D COMPUTED TOMOGRAPHY/ULTRASOUND IN PATIENTS WITH HYPERPARATHYROIDISM.** David I. Kutler, MD, Rachel A Moquete, BA, William I Kuhel, MD, Eli Kazam, MD; Weill Cornell Medical Center.

**Background:** Accurate preoperative localization of hyperplastic parathyroid glands increases surgical success and minimizes operative risk. 4D Computed Tomography (4D-CT) was recently shown to be highly sensitive and specific in identifying hyperplastic parathyroid glands in the reoperative setting. The purpose of this study is to document our decade long experience using 4D-Computed Tomography/Ultrasound (4D-CT/US) to localize abnormal parathyroid glands in patients with hyperparathyroidism. **Study Design:** This is a retrospective chart analysis of 185 patients who underwent a parathyroid localization series at Manhattan Diagnostic Radiology (MDR) and parathyroidectomy at Weill Cornell Medical Center between January 1998 and May 2009. Of the 185 patients, 11 were in the reoperative setting. Results from preoperative localization studies were compared to operative findings, pathologic data and biochemical measurements to assess the sensitivity and specificity of the parathyroid localization series. **Results:** 4D-CT/US demonstrated 96% sensitivity and 90% specificity when the imaging studies were used to lateralize the hyperfunctioning parathyroid gland to 1 side of the neck. Furthermore, the sensitivity and specificity of the parathyroid series to localize the hyperfunctioning parathyroid gland to a specific quadrant of the neck (ie right superior) was 82% and 92% respectively. Of the 185 patients, 4D-CT/US was felt to show a single adenoma in 146 patients. Of the 146 patients, 4D-CT/US accurately localized the adenoma to the correct side of the neck in 134 cases (92%). Multigland disease was found in 11 patients (8%) believed to have single gland disease. Of the 38 patients who were thought to have multigland disease based on the results of the 4D-CT/US, multigland disease was documented in 28 patients (74%). Only a single parathyroid localization study was non-localizing and that patient was found to have single adenoma. At follow up, 175 patients (95%) were cured. 4% had persistent primary hyperparathyroidism and 2 (1%) had permanent hypoparathyroidism. **Conclusion:** 4D-CT/US provides greater sensitivity and specificity when compared to the historical data for sestamibi imaging. When interpreted by a skilled radiologist, 4D-CT/US facilitates accurate preoperative planning in both the primary and reoperative settings.

**S041**

**INTRAOPERATIVE PARATHYROID HORMONE MONITORING IN PARATHYROIDECTOMY; IS IT MANDATORY?** Aviram Mizrahi, MD, Gideon Bachar, MD, Tuvia Hadar, MD, Raphael Feinmesser, MD, Thomas Shpitzer, MD; Department of Otorhinolaryngology and Head and Neck Surgery, Rabin Medical Center, Beilinson Campus, Petach Tikva, and Manhattan Diagnostic Radiology, Manhattan, NY.

**Objective:** The purpose of this study is to determine if the intraoperative measurement of parathyroid hormone (iPTH) can improve the accuracy of localization and intraoperative management of parathyroidectomy. **Design:** Retrospective chart review. **Setting:** University-affiliated tertiary medical center. **Patients and Methods:** Two hundred forty consecutive patients surgically treated for primary hyperparathyroidism were divided into 3 groups by preoperative and intraoperative diagnostic modalities: group 1 (n=109) - technetium 99m sestamibi (MIBI), ultrasonography, and iOPTH monitoring; group 2 (n=102) - ultrasonography and MIBI; group 3 (n=29) - ultrasonography and iOPTH monitoring. The sensitivity and specificity of each combination were compared. **Results:** Group 1: Ultrasonography and MIBI were concordant in 97% of cases, and additional iOPTH monitoring improved the success rate in the 3 discordant cases. Group 2: Ultrasonography and MIBI were concordant for the same site in 95% of cases. Group 3: Ultrasonography had a sensitivity of 89% and a positive predictive value (PPV) of 96%. iOPTH monitoring increased the sensitivity to 96%, with no change in the PPV. Operative time was significantly longer (P<0.0001) when iOPTH monitoring was applied (groups 1 and 3) than when only ultrasonography and MIBI were used (group 2). **Conclusions:** This study demonstrates the importance of preoperative evaluation and the need for experienced imaging personnel in the surgical treatment of hyperparathyroidism. When both ultrasonography and MIBI are added, additional iOPTH seems to have only marginal benefit given the longer duration of surgery. Intraoperative monitoring performed by a dedicated radiologist, with additional iOPTH monitoring and in the absence of MIBI, has a good success rate.
weeks). Pretreatment levels (% and absolute counts) of CD3, CD4, CD8, NK, and B cells and overall WBC were measured by flow cytometry. Correlations of subsets with HPV-16 status, tumor subsite, stage, T class, N class, smoking status, performance status, gender, response to chemoradiation, p53 mutation, EGFR expression and disease specific and overall survival were determined. Results: With median follow up of 6.6 years, 4-year disease specific survival was 76%. Improved survival was associated with elevated %CD8 levels, low CD4/CD8 ratio (p = .043, p < .11 respectively), low EGFR expression (p = .002), and HPV status (p = .017). Percent CD8 cell levels were significantly higher in HPV+ patients (p = .038) and the CD4/CD8 ratio was lower (p = .021). Total WBC tended to be lower in HPV+ patients (p = .016). Mean WBC was higher and hemoglobin significantly lower in smokers compared to former or never smokers, but there were no significant differences in lymphocyte subsets among smokers and non-smokers. Higher %CD8 cells were associated with response to induction chemotherapy (p = .022) and complete tumor response after chemoradiation (p = .045). Local failure was associated with low CD8 levels (p = .035). Conclusions: These findings confirm prior correlations of outcome with CD8 cell levels in patients with head and neck cancer. We investigated the feasibility of a prospective cohort of advanced oropharyngeal cancer patients. These are the first data demonstrating an association of higher levels of cytotoxic T lymphocytes with HPV+ cancer and support the conjecture that improved adaptive immunity may play a role in the favorable prognosis of these patients.

FK retractor (Gyrus Medical Inc., Maple Grove, MN) was used for transoral exposure of the lesion. A face-up 30-degree endoscope was inserted through the oral cavity and two instrument arms were located in both sides of the endoscope. Pyriform sinus was resected totally as cone-shape, and ipsilateral arytenoid cartilage was saved for function preservation. Inner perichondrium of thyroid cartilage was peeled off after perichondrium was incised horizontally to make sure safe margin of antero-lateral portion in pyriform sinus cancer cases. Results: TORS was performed successfully in all nine patients. The mean robotic operation time was 62.3 minutes, and an average of 15.6 minutes was required for the setting of the robotic system. There was no significant perioperative complication in all cases. Swallowing function completely returned in all patients within 7.8 days average. Decannulation could be carried out within an average of 6.2 days after surgery. Conclusions: Technical feasibility and efficacy of TORS for pyriform sinus resection was proven in this study. We propose TORS as a treatment option for organ preservation to increase the quality of life of the patients.
and December 2008 were studied. The mean follow-up time was 26 months (range 12 to 33 months). **Results:** Using a Kaplan-Meier survival analysis, the 1 and 2-year recurrence free survival for the cohort was 90.5 and 87.7 respectively. There were 7 stage 3 tumors and 10 stage 4 tumors. There had been a total of 11 recurrences: 3 local recurrences, 6 regional recurrences, and 2 distant recurrences. At the time of the study 1 patient had died of their disease, 1 patient had died of other disease, and 2 patients were alive with disease. None of the patients were PEG dependent at last follow-up. **Conclusion:** The early functional and oncologic results justify the continued treatment of select head and neck squamous cell carcinoma patients with robotic assisted surgical resection.
**Poster Papers**

**P001 (COSM Poster #23)**

**STAT3 ACTIVATION IN MYELOID DERIVED SUPPRESSOR CELLS OF HEAD AND NECK CANCER PATIENTS MAY REGULATE IMMUNE SUPPRESSIVE FUNCTION.**

David M Vasquez-Dunddel, MD PhD, Tuilia C Bruno, MS, Emilia Albesiano, PhD, Juan Fu, PhD, Drew Pardoll, MD PhD, Young Kim, MD; PhD Sidney Kimmel Comprehensive Cancer Center, Johns Hopkins University School of Medicine, Baltimore, Maryland 21231, USA.

Myeloid-derived suppressor cells (MDSC) have been demonstrated to play a key immune suppressive role in different types of cancer. Several mechanisms have been proposed to be associated with the suppressive activity of this group of cells. We focused our study in the relevance of STAT3 activation of peripheral circulating MDSC and intra-tumoral MDSC, characterized as CD33+CD11b+CD14+ HLA-DR~-low cells in patients with head and neck cancer. MDSC were isolated and multicolor cell analysis was performed. Our study demonstrated that head and neck cancer patients had elevated levels of circulating and intra-tumoral CD33+CD11b+CD14+ HLA-DR~-low MDSC cells that suppress autologous T-cell proliferation. These cells show a high level of phosphorylated STAT3 when compared with CD11b+CD14+HLA-DR~-low cells. Understanding the association of these mechanisms is important for the design of future immunotherapeutic approaches for advanced head and neck malignancies.

**P002 (COSM Poster #24)**

**ROLE OF IMMUNOSUPPRESSIVE T CELLS IN PAPILLARY THYROID CARCINOMAS.**

Sofia Lyford-Pike, MD, Shiwen Peng, MD, Ralph P Tufano, MD, Sara I Pai, MD PhD; Johns Hopkins University School of Medicine.

**Background:** Tumors can modulate their local microenvironment in order to evade immune surveillance mechanisms. Normally, effector T cells play an important role in eradicating abnormal cellular growth, whereas suppressor T cells dampen active immune responses to prevent processes such as autoimmunity. However, in the cancer setting, the presence of these suppressor T cells can facilitate tumor growth by counteracting effector T cell anti-tumor immune responses.

**Objective:** To evaluate the role of suppressor T cells (specifically, regulatory T cells (CD25+CD4+FoxP3+) and the PD-1:PD-1L1/L2 pathway) in the development of papillary thyroid cancer.

**Design:** Patients diagnosed with papillary thyroid carcinoma who were undergoing surgical resection were eligible for the study. Mononuclear cells were isolated from the peripheral blood, primary thyroid tumor and contralateral normal thyroid tissue (CN). From these mononuclear cells, T cell populations were evaluated for the expression of CD4, CD8, CD25, CD45, CD3, PD-1, and FoxP3 using multi-color flow cytometry.

**Outcomes Measures:**
- Cell population frequency and density were compared among peripheral blood, primary tumor and CN.
- Results: The frequency of CD25+CD4+FoxP3+ T cells was increased in tumors (mean 32.57%) when compared to CN (9.09%) or blood (4.57%), p=0.03. CD4+/PD-1+ T cells were increased in tumors when compared to CN or blood (means: 56.24%, 30.01%, 3.33%, respectively, p=0.008). CD8+/PD-1+ T cells were also increased in tumors compared to CN or blood (means: 57.80%, 29.31%, 4.82% respectively, p=0.006).
- Conclusion: Suppressor T cells are detected at high frequency in papillary thyroid cancers. This increased frequency may correlate with clinical outcomes. Although the presence of high numbers of these suppressor cells has been previously reported in the peripheral blood of cancer patients, this is the first report of their detection at high frequency within the primary tumor. Locally targeting these tumor-infiltrating immunosuppressive cell populations may enhance anti-Tumor immune responses and thereby improve clinical outcomes.

**P003 (COSM Poster #25)**

**INDUCIBLE NITRIC OXIDE SYNTHASE (INOS)-DIRECTED TARGETED THERAPY REVERSES INFLTRATION OF IMMUNOSUPPRESSIVE MYELOID CELLS IN A MOUSE MODEL OF CUTANEOUS MELANOMA.**

Padmini Jayaraman, PhD, Falguni Parikh, MS, Foaz Kayali, MD PhD, Ian Sambur, MD, Vijay Mukhija, MD MPH, Nina Chininosvntana, MD, Esther Lopez-Rivera, PhD, Johnny Kao, MD, Andrew G Sikora, MD PhD; Mount Sinai School of Medicine.

Tumor-mediated immunosuppression is increasingly recognized to play an important role in cancer maintenance, progression, and resistance to immunotherapy. Myeloid-derived suppressor cells (MDSC) are immature myeloid cells which infiltrate solid tumors, including cutaneous melanoma, squamous cell carcinoma, breast, prostate, and other cancers. MDSC potently inhibit anti-tumor T lymphocyte responses through a variety of mechanisms including expression of the enzyme arginase, reactive oxygen species, and the production of nitric oxide (NO) by iNOS. While inhibitors of iNOS can antagonize suppression of T cell responses by MDSC, iNOS and NO have not previously been shown to play a role in the accumulation of MDSC into solid tumors. We tested the effect of the small molecule iNOS inhibitor N6-(1-iminoethyl)-L-lysine-dihydrochloride (L-NIL) on infiltration of MDSC into syngeneic B16 murine melanoma in C57BL/6 mice. Flow cytometry analysis of single-cell suspensions from subcutaneous B16 tumors revealed progressive infiltration of GR1+CD11b+ MDSC. MDSC infiltration was correlated with elevated serum levels of vascular endothelial growth factor (VEGF), a soluble mediator associated with MDSC recruitment. Oral treatment of tumor-bearing mice with L-NIL reduced the intratumoral accumulation of MDSC by 2-5-fold, which was associated with a significant reduction of serum VEGF levels. The proportion of CD4+ and CD8+ T was diminished in the presence of tumor-bearing mice in the absence of supporting the decline in CD4+ and CD8+ splenocytes, and was associated with a modest (20-30%) increase in tumor-infiltrating CD4+ and CD8+ T cells, and enhanced infiltration of natural killer (NK) cells. In summary, targeted inhibition of iNOS reduces intratumoral MDSC infiltration and enhances trafficking of immunocytes into melanoma, suggesting a potential strategy for reversing tumor-mediated immunosuppression.

**P004 (COSM Poster #26)**

**SOLUBLE FACTORS PRODUCED BY ORAL SQUAMOUS CELL CARCINOMA STIMULATE OSTEOCLASTOGENESIS.**

Mohammed AlKindi, DDS ScOMS, Osama Hussein, MD DS, Svetlana Komarova, PhD; McGill University.

**Objective:** Bone invasion by oral squamous cell carcinoma (OSCC) affects the patient’s quality of life as well as the disease prognosis. However, the precise mechanisms of interactions between OSCC cells and bone cells are poorly understood. Since osteoclasts are critical for bone destruction, we hypothesized that tumor cells can directly stimulate osteoclasts formation.

**Methods:** BHY human OSCC cell line demonstrating bone invasive phenotype was cultured for 48 h and conditioned medium (CM) was collected. The effect of BHY CM on osteoclast formation from RAW 264.7 mouse monocytic cell line was assessed. Osteoclasts were identified as multinucleated TRAP-positive cells and expression of osteoclast markers Calcitonin receptor, RANK, Cathepsin K and TRAP was assessed by real-time PCR.

**Results:** Addition of BHY CM (50%) to untreated RAW 264.7 did not induce osteoclast formation. However, when RAW 264.7 were cultured with BHY CM (50%) and RANKL for 2 days and then treated with BHY CM, marked (2-6 fold) induction of osteoclastogenesis was observed. We have found that BHY CM induced ERK1/2 phosphorylation in osteoclast precursors. Treatment with MEK1/2 inhibitor PD98059 resulted with significant inhibition of BHY CM-induced osteoclastogenesis. In addition, p38 inhibitor SB203580, but not an inactive control SB202474, also significantly inhibited osteoclastogenic effect of BHY CM.

**Conclusion:** Squamous cell carcinoma cells produce soluble factors that stimulate osteoclast formation from RANKL-primed precursors. These factors can reversibly reverse the decline in osteoclastogenesis.

**Tumor-derived factors act by stimulating RANKL expression and p38 MAPK pathway in osteoclast precursors.**

**P005 (COSM Poster #27)**

**PRIMARY HEAD AND NECK SQUAMOUS CELL CARCINOMAS AND HNSCC-DERIVED XENOGRAFTS HAVE DISTINCTLY DIFFERENT METHYLATION AND EXPRESSION SIGNATURES THAN HNSCC-DERIVED CELL LINES.**

Patrick T Hennessey, MD, Michael F Ochs, PhD, Wojciech K Mydlarz, MD, Joseph A Calfiano, MD; Department of Otolaryngology - Head and Neck Surgery, Johns Hopkins Medical Institutions, Baltimore, MD.

**Objective:** Alterations in promoter methylation and the resulting changes in gene expression have been shown to play a critical role in the pathogenesis of a wide variety of human cancers. Although primary tumors are preferred sources of DNA and RNA for studying methylation and gene expression changes in cancer, many studies rely on cell lines to investigate these relationships due to either a lack of access to...
Poster Papers

primary tumors or a lack of sufficient primary tumor for the experiments. To address the issue of having insufficient primary tumor available for research purposes, our lab grew xenografts from fresh primary tumors in nude mice. The methylation and expression patterns of tumor-derived xenografts, tumor-derived cell lines, and cell lines derived from normal oral mucosa were then compared to primary tumors. **Design:** Genomic DNA and total RNA were extracted from primary tumors, xenografts, and cell lines. Genomic DNA samples were analyzed by methylation microarrays. The RNA samples were analyzed using expression microarrays. Data from the microarrays were normalized and then analyzed independently using unsupervised hierarchical clustering. The data from both microarray platforms were subsequently analyzed using Significance Analysis of Microarrays (SAM) to generate lists differentially methylated and differentially expressed genes. **Subjects:** Genomic DNA and total RNA were extracted from five HNSCC cell lines (JHU-O11, JHU-O22, FADU, UM-22A and UM-22B), two cell lines derived from normal oral mucosa (OKF6 and NOK-SI), four primary HNSCC tumors and four matched tumor-derived xenografts grown in nude mice.

**Results:** Unsupervised hierarchical clustering analysis of the normalized methylation array data demonstrated that overall methylation patterns of the primary tumors, xenografts and OKF6 cell line compared to the HNSCC cell lines and NOK-SI cell line, which was evident at the first branch point in the dendrogram. Globally, all of the cell lines except the OKF6 cell line were hypermethylated compared to the primary tumors and xenografts. Expression analysis demonstrated a clustering of primary tumors and xenografts into one group and all cell lines into a second group after the first branch point on the dendrogram. SAM analysis identified 239 genes up-regulated and 941 genes down-regulated in both tumors and xenografts when compared to the cell lines. **Conclusions:** Tumor-derived xenografts appear to better represent the methylation and gene expression signatures seen in primary tumors than HNSCC cell lines.

**P006 (COSM Poster #28)**

**THE ROLE OF MAGEA2 IN THE TUMORIGINIC PATHWAY OF HNSCC.** Chad A. Glazer, MD, Ian M Smith, MD, Sheetal Bhan, PhD, Wenye Sun, PhD, Steven S Chang, MD, Kavita M Pattani, MD, William Westra, MD, Zubair Khan, MD, Joseph A Califano, MD, Johns Hopkins Medical Institutions. **Objective:** The disruption of p53 function via missense somatic mutations is known to be a central factor in the oncogenic pathway leading to HNSCC; however, many primary HNSCC tumors lack mutations in the TP53 tumor suppressor gene. It is currently unknown how the p53 pathway is silenced in this subset of HNSCC. Recent evidence has shown that the MAGEA family may be involved in the downstream silencing of p53 gene targets via the MAGEA2-p53 complex shown to be active in this cellular outcome. In this study, we examined the role of MAGEA2 in the tumorigenesis of HNSCC. **Methods:** Primary tissue microarray data and quantitative RT-PCR (qRT-PCR) in a separate cohort of primary tissue showed that MAGEA2 is differentially overexpressed in HNSCC. Anchorage dependent growth studies and cell cycle analysis using flow cytometry were performed in normal upper aerodigestive cell lines after transfection with a MAGE2 construct. Small interfering RNAs (siRNA) were then used to knockdown MAGEA2 in HNSCC cells, and growth characteristics were examined. qRT-PCR was used to evaluate expression changes of p53 downstream target genes following transfection of MAGEA2 into normal upper aerodigestive cell lines. **Results:** Cancer Outlier Profile Analysis (COPA) was used to analyze 49 HNSCC tumors and 19 normal upper aerodigestive tissue mRNA expression arrays. This analysis showed that MAGEA2 was significantly overexpressed in 15/49 tumors (30%) (p<0.001). To confirm these results, we performed qRT-PCR on a separate cohort of HNSCC and normal, non-cancer upper aerodigestive mucosal samples. We found statistically significant MAGEA2 overexpression in 32 tumors compared to 7 normal tissues (p<0.05). This showed that MAGEA2 provides a selective growth advantage in HNSCC and normal oral keratinocyte cell lines. Transfection of a MAGE2 construct into a spontaneously immortalized oral keratinocyte cell line, NOK-SI, showed a 34% (± 3%) increase in anchorage dependent (AD) growth at 72h; while siRNA knockdown of MAGEA2 in HNSCC cells, JHU-O11, showed a 28% (± 3%) decrease in AD growth at 72h after introduction of MAGEA2 siRNA. Next, we used qRT-PCR to determine whether MAGEA2 transfection alters expression levels of two main downstream targets of the p53 tumor suppressor gene, BAX and CDKN1A. 72h post MAGEA2 transfection, we found that both CDKN1A and BAX were significantly downregulated in two normal human oral keratinocyte cell lines (NOK-SI and OKF6-Tert-1) (p< 0.05). Using flow cytometry following MAGEA2 transfection and confluency arrest of NOK-SI cells, we showed that MAGEA2, through its interaction with the p53 pathway, exerts its growth effects by decreasing cell cycle arrest. This analysis showed that NOK-SI cells transfected with MAGEA2 had a much smaller percentage of cells arrested in G1, 66.5%, compared with cells transfected with the empty vector, 85% in G1 arrest. **Conclusions:** These data suggest that MAGEA2 is differentially expressed in HNSCC and functions, in part, through the p53 pathway by increasing cellular proliferation and abrogating cell cycle arrest. This improved understanding of MAGEA2 function and expression patterns will potentially allow for the improved ability to use MAGEA2 for detection, surveillance and targeted therapeutics.

**P007 (COSM Poster #29)**

**CD44+ CANCER STEM-CELL-LIKE CELLS ARE RESPONSIBLE FOR TREATMENT RESISTANCE IN SQUAMOUS CELL CARCINOMA OF THE HEAD AND NECK.** Kazuaki Chikamatsu, Hiroki Ishii, Atsushi Okamoto, Koichi Sakakura, Goro Takahashi, Keisuke Masuyama; Department of Otolaryngology-Head and Neck Surgery, University of Yamanashi, University of Pittsburgh Cancer Institute. Recent progression in stem cell biology has greatly facilitated the identification and characterization of cancer stem cells (CSCs) from a variety of tumors including squamous cell carcinoma of the head and neck (SCCHN). CD44 is currently used to identify CSCs as one of the cell surface markers for SCCHN. In this study, we investigated the mechanisms underlying treatment resistance of the CD44+ cancer stem-like cells from a SCCHN cell line. Under serum-free medium culture conditions, we enriched a subpopulation of CD44+ cells that possesses a marked capacity for forming tumor spheres in vitro. The sorted CD44+ cell population was significantly more resistant to chemotherapeutic agents including cisplatin, docetaxel, and 5-FU and radiation than the CD44- cell population. Gene expression analysis demonstrated that expression of various genes related to chemoresistance and anti-apoptosis was up-regulated in CD44+ cells. Moreover, cell cycle analysis showed that a higher percentage of CD44+ cell were in S and G2/M phases than CD44- cells. Taken together, our findings suggest that the presence of such CSCs with the potential to survive conventional treatment regimens has important clinical implications for head and neck cancer treatment. Further study of CSCs in SCCHN may facilitate the development of novel therapeutic strategies.

**P008 (COSM Poster #30)**

**CHRONIC CIGARETTE SMOKE EXTRACT TREATMENT INDUCES THE GROWTH OF NORMAL ORAL KERATINOCYTES VIA PDK2 UPREGULATION, INCREASED AEROBIC GLYCOLYSIS AND HIF1A STABILIZATION.** Wenye Sun, PhD, Steven S Chang, MD, Yumei Fu, PhD, Yan Liu, PhD, Joseph A Califano, MD; Johns Hopkins Medical Institutions. Exposure to cigarette smoke is a major risk factor for head and neck squamous cell carcinoma (HNSCC). We have established a chronic cigarette smoke extract (CSE)-treated human normal oral keratinocyte model, demonstrating an elevated frequency of mitochondrial mutations in CSE treated cells (Chang SS, Int J Cancer, 2010 (126): 19-27). Using this model we further characterized the mechanism by which chronic CSE treatment induces increased cellular growth. We found that chronic CSE treatment upregulates PDK2 expression, decreases PDH activity and thereby increases the aerobic glycolytic metabolites pyruvate and lactate. We also found that the chronic CSE treatment enhanced HIF1 accumulation through increased pyruvate and lactate production in serum selectively resistant U-37-SCC cells. In these cells, a small molecule inhibitor blocked the growth induced by chronic CSE treatment in OKF6 cells. Furthermore, chronic CSE treatment was found to increase ROS (reactive oxygen species) production. Application of the ROS scavengers N-acetylcysteine abrogated the expression of PDK2 and HIF1. Notably, treatment with dichloroacetate, a PDK2 inhibitor, also decreased the HIF1 expression as well as cell proliferation in chronic CSE treated OKF6 cells. In conclusion, our findings suggest that chronic CSE treatment contribute to cell growth via increased ROS production through mitochondrial mutations, upregulation of PDK2, attenuating...
PHD activity thereby increasing aerobic glycolytic metabolites, resulting in normoxic HIF1 stabilization. This study suggests a role for chronic tobacco exposure in the development of aerobic glycolysis and normoxic HIF activation as a part of HNSCC initiation. These data may provide insights into development of chemopreventive strategies for smoking related cancers.

**P009 (COSM Poster #31)**

**SNAIL CONTROLS THE MESENCHYMAL PHENOTYPE AND DRIVES ERLOTINIB RESISTANCE IN HNSCC CELLS.** Guanyu Wang, MD PhD, David Hu, MD, Jie Luo, MS, Mariam Dohadwala, PhD, Qahera Munaim, Ontario Lau, MD, Chi Lai, MD, David Elashoff, PhD, Steven Dubinett, MD, Maie St. John, MD PhD; University of California, Los Angeles, Jonsson Comprehensive Cancer Center.

**Purpose:** The presence of regional metastases in HNSCC patients is a common and adverse event associated with poor prognosis. Understanding the molecular mechanisms that mediate HNSCC metastasis may enable identification of novel therapeutic targets. Our recent work on human HNSCC tissues underlies Snail’s role as a molecular prognostic marker for HNSCC. Snail positivity is significantly predictive of poorly differentiated, lymphovascular invasive, as well as regionally metastatic tumors. We recently reported the role of Snail in the inflammation-induced promotion of EMT in HNSCC. However, other important Snail-dependent malignant phenotypes have not been fully explored. Here, we investigate the capacity of Snail to drive EMT in human oral epithelial cell lines, and its ability to confer drug resistance. **Experimental Design:** Snail was overexpressed in HOK and OKF oral epithelial cell lines. AIG assays, wound healing assays, invasion & migration assays, spheroid modeling, and drug resistance assays were performed. Differential gene expression between Snail-overexpressing and control epithelial and tumor cell lines was evaluated using gene expression microarray analysis. **Results:** The overexpression of Snail in human oral epithelial cell lines (HOK, OKF) drives EMT. OKF-Snail and HOK-Snail lines demonstrate growth in Anchorage-independent growth assays; a decreased capacity to form tight spheroids; increased resistance to erlotinib; and they were highly invasive and migratory. Gene expression analysis also revealed Snail-associated differential gene expression with the potential to affect inflammatory cytokine regulation, migration, invasion and diverse aspects of HNSCC progression. **Conclusion:** Snail controls the mesenchymal phenotype and drives erlotinib resistance in HNSCC cells. Snail may prove to be a useful marker in predicting EGFR inhibitor responsiveness.

**P010 (COSM Poster #32)**

**NEW MECHANISMS THAT REGULATE C-MYC ONCOGENIC ACTIVITY IN HEAD AND NECK SQUAMOUS CELL CARCINOMA.** Vivian F Wu, MD MPH, Amy Farrell, PhD, Xiao-Jing Wang, MD PhD, Rosalie C Sears, PhD Departments of Otolaryngology-Head and Neck Surgery and Molecular and Medical Genetics, Oregon Health and Science University, Portland OR; Department of Pathology, University of Colorado Denver Health Sciences Center, Aurora, CO.

**Background:** c-Myc protein is highly expressed in approximately 70% of human tumors, including head and neck squamous cell carcinoma (HNSCC). Recent research by our laboratory and others has revealed a novel signaling pathway that controls c-Myc protein stability through two conserved phosphorylation sites, threonine 58 (T58) and serine 62 (S62), providing another mechanism for the accumulation of c-Myc in human tumors. Since many of the proteins involved in controlling c-Myc expression through a phosphorylation dependent degradation pathway can be misregulated in human cancer, we predict that aberrant phosphorylation of c-Myc is a major mechanism for c-Myc overexpression in cancer. Our research using a novel c-Myc knock-in mouse model shows that c-Myc mutation at Threonine 58 to Alanine, which leads to constitutive Serine 62 phosphorylation and increased c-Myc stability, increases epithelial cell proliferation and can lead to hyperplasia in the upper aerodigestive tract, including the tongue and esophagus. Altered c-Myc stabilization thus may be needed to initiate head and neck tumor formation. **Objective:** To examine c-Myc phosphorylation and stabilization in HNSCC development. **Methods:** Human HNSCC and normal tissue samples were obtained through Institutional Review Board approved protocols. Protein, RNA, DNA and tissue sections were prepared from these samples. We then evaluated phosphorylation patterns of c-Myc at T58 and S62 in human HNSCC samples and compared them to normal tissue. We correlated phosphorylation status to recurrence patterns and disease stage. **Setting:** Tertiary care academic medical center. **Results:** Immunofluorescence indicates overexpression of c-Myc oncoprotein in 7/7 tumor samples compared to adjacent tissue. Furthermore, total c-Myc and pS62 were increased and pT58 was decreased in tumor compared to adjacent tissue. This was confirmed by immunoblot. In addition, analysis of mRNA indicated a subset with elevation: 5/26 (19.2%) in human HNSCC samples. Interestingly, of the 5 samples with elevated mRna, 3 samples (60%) were recurrences of oral cavity or oropharyngeal SCC (including one patient with dermal metastasis) and the other 2 were advanced stage larynx SCC. Of the 21 samples without elevated myc expression, 7/21 (33%) were recurrent cancer with 19/21 samples being advanced stage SCC. **Conclusions:** Total c-Myc and S62 phosphorylation appears to be elevated in human HNSCC while T58 phosphorylation is decreased. This is consistent with the c-Myc phosphorylation pattern seen in other cancers such as breast and Burkitts lymphoma. Understanding the role of c-Myc phosphorylation patterns will provide better strategies for creating targeted therapies for application in clinical trials for HNSCC.

**P011 (COSM Poster #33)**

**GENOMIC SCREENING IN DIFFERENT HISTOLOGICAL STAGES IN ORAL SQUAMOUS CELL CARCINOMAS.** Sabrina Daniele da Silva, PhD, Fabio Aubuquerque Marchi, MSc, Fernando Augusto Soares, PhD, Silvia Regina Rogatto, PhD, Luiz Paulo Kowalski, PhD; AC Camargo Hospital, Sao Paulo, Brazil.

**Background:** Despite of progress in therapy, the prognosis of patients with oral squamous cell carcinoma (OSCC) has still not improved significantly over the last decades. These tumors are associated with several genetic/epigenetic changes and substantial efforts have been prompted to identify molecular biomarkers to predict cancer risk and prognosis. **Objectives:** Array comparative genomic hybridization (aCGH) analysis was performed in order to identify chromosomal imbalances and genome-wide screening in different histological graduation groups of OSCC. **Methods:** Included 30 fresh frozen samples (3 groups with 10 primary OSCC samples in histological grade I, II, and III) and normal reference genomic DNA from commercial source. Clinical and treatment data were obtained from the medical records and all histological diagnosis was reviewed. OSCC was microdissected using laser capture microdissection (LCM) and DNA hybridization was performed in Agilent’s 44K arrays. The expression differences for 5 selected genes were confirmed by immunohistochemical reaction in a TMA with 75 OSCC. **Results:** Copy number changes were detected in 90% of the cases. It was observed a pattern that there is a pattern for genomic instability with gain and losses in the chromosome of these samples. The most recurrent copy number changes were gains at 1, 2, 8, 11, 12, and 17. These regions showed similarity in their pattern of imbalance to the chromosomal alterations described in all three groups. The protein expression of topoisoasemase-II alpha was associated with invasive tumors (P=0.042) and vascular embolization (P=0.044). Transforming growth factor-beta3 (TGFbeta3) was correlated with smoking patients (P=0.028) and cellular proliferation (Ki67 - P=0.023). N-myc downstream-regulated gene (NDRG1) showed significant association with signal transducer and activator of transcription (STAT1 P<0.001) and CMYC (P=0.008). **Conclusion:** These findings suggest that array CGH analysis proved to be effective methods to identify chromosome regions and novel target genes involved in the oral tumorigenesis.

**P012 (COSM Poster #34)**

**INHIBITORS OF AKT PHOSPHORYLATION: A NOVEL TREATMENT FOR HEAD AND NECK SQUAMOUS CELL CARCINOMA.** Joseph A Knowles, MD, Emily Helman, MS, Nichole Dean, DO, Eben L Rosenthal, MD; University of Alabama at Birmingham.

**Introduction:** Merck’s MK-2206 is an orally active, allosteric inhibitor of Akt. The PI3K-Akt pathway is a downstream signaling pathway for many receptor tyrosine kinases including the epidermal growth factor receptor (EGFR) which is over-expressed in most head and neck squamous cell carcinoma (HNSCC). Here we examine the role Akt inhibitors may play in treating HNSCC. **Methods:** Cell survival assays using HNSCC cell lines (CAL27, FaDu and SCC-1) were performed at
P013 (COSM Poster #35)

**MOLECULAR MARKERS OF MRN IN CISPLATIN-BASED CHEMORESISTANCE WITH HUMAN HEAD AND NECK CANCER.**

Taku Yamashita, MD PhD, Shunsuke Miyamoto, MD, Wei-Ting Hwang, PhD, Bert W O Malley, MD PhD; University of Pennsylvania School of Medicine, Philadelphia, PA.

**Background:** Chemoresistance to cisplatin significantly contributes to treatment failure in clinical practice for head and neck cancer. The MRE11/RAD50/NBS1 (MRN) complex is well known a major DNA repair system. Our previous in vitro study shows that enhanced DNA repairing by MRN is a critical molecular mechanism for cisplatin-based chemoresistance. The present study further investigates if the finding of enhanced DNA repairing is responsible for cisplatin-based chemoresistance with human head and neck squamous cell carcinoma (HNSCC) in an animal model and if this finding correlates to the clinical study with patients who suffer from HNSCC.

**Methods:** An animal model with human HNSCC was used for this study. Tumor volume changes were measured in two dimensions and the net intensities of fluorescence from the tumor with tdTomato were also measured before and after cisplatin treatment. Immunohistochemistry studies were carried out for detecting the MRN expression and apoptosis. The chemoresistant profile of the tumor model was established depending on these studies. The patients with HNSCC who initially received cisplatin monotherapy were investigated. Immunohistochemistry studies were conducted for detecting the MRN expression and apoptosis. These results were analyzed by using a linear regression model with random effects to compare with established animal tumor model and in vitro findings.

**Results:** Our animal model demonstrated that chemoresistance to cisplatin is associated with increased expression levels of MRN after cisplatin treatment (p<0.0001(RAD50), p<0.0001(NBS1)). In addition, the resistant tumors showed decreased levels of apoptosis after cisplatin treatment (p<0.0001). Our clinical study confirms these findings as shown that patients with HNSCC had increased expression of MRN when developing cisplatin chemoresistance. Conclusion: It is strongly suggested that increased expression levels of MRN proteins after cisplatin treatment are associated with a resistant phenotype in the human HNSCC. Our study presents important findings that will facilitate a better understanding of the molecular mechanisms underlying tumor cell resistance to chemotherapy.

P014 (COSM Poster #36)

**HUMAN PAPILLOMAVIRUS INFECTION CORRELATED INVERSELY WITH P53 MUTATION AND P16 METHYLATION IN HEAD AND NECK SQUAMOUS CELL CARCINOMA.**

Yufuka Tokumaru, MD, Masato Fujii, MD, Yoko Yajima, MD; National Hospital Organization Tokyo Medical Center.

**Objective:** The human papillomavirus (HPV) is detected in a subset of head and neck squamous cell carcinomas (HNSCC), especially dominant in the tumor of oropharynx. These HPV-positive HNSCCs are less commonly associated with smoking and alcohol exposure, suggesting a pattern of genetic and epigenetic alterations is quite distinct from that of HPV-negative tumors. The p53 tumor suppressor gene plays a critical role in key pathway involving apoptosis and cell cycle control. In addition, DNA promoter hypermethylation is a common feature of human cancers such as p16 methylation. The objective of this study was to clarify the relationship between HPV infection and TP53 mutations, p16 hypermethylation in HNSCC.

**Methods:** Patients with newly diagnosed HNSCC in the Tokyo Medical Center from 2005 through 2009 were enrolled in this study. Tumor samples were rapidly frozen at -80°C and then DNA was extracted. We analyzed purified DNA for HPV detection and typing by PCR assay targeted to the E6 and E7 regions of the viral genome. TP53 mutational status of exon 2 to 11 was evaluated using automatic sequencing. Promoter hypermethylation of p16 was analyzed by quantitative methylation-specific PCR.

**Results:** Of the 69 tumors, 41 (59%) harbored a TP53 mutation including 19 (28%) disruptive mutations. HPV 16 and 33 were detected in 50% of oropharyngeal cancer (OPC). Although HPV was present in 5 of 6 (83%) OPCs that did not harbor p53 mutations, HPV16 was detected only 1 of 8 (12.5%) OPCs with p53 mutations (P = 0.03). In addition, HPV-positive tumors were less likely to harbor p16 methylation than HPV-negative tumors (20% vs. 60%). Conclusion: HPV infection correlated inversely with not only TP53 mutation but also p16 methylation in HNSCC. HPV associated HNSCC has a molecular profile that is distinct from non-HPV HNSCC, suggesting novel treatment strategies should be needed for those tumors.

P015 (COSM Poster #37)

**QUANTITATIVE ANALYSIS OF SERUM MARKERS FOR WELL DIFFERENTIATED THYROID CANCER.**

Ali Shahnazay, MD, Mark Taylor, MD FRCS, Jonathan Trites, MD FRCS, Joseph Nasser, MD FRCS, Dev Pinto, PhD, Tobias Karakach, PhD, John Walter, PhD, Rama Singh, PhD, Martin Bullock, MD, Rob Hart, MD FRCS; Dalhousie University, Halifax, Nova Scotia.

**Objective:** The incidence of papillary thyroid cancer is increasing in North America. There are currently no serum markers for the diagnosis of papillary thyroid cancer (PTC) or for risk stratification of thyroid masses. Our aim is to identify potential serum markers in subjects with PTC. We will also compare the metabolomics profile of thyroid masses, with that of normal thyroid tissues using nuclear magnetic resonance (NMR).

**Methods:** Thyroid tissue samples and serum were obtained from 25 consecutive patients undergoing thyroidectomy procedures at our hospital between December of 2008 and February of 2009. Enzyme-linked immunosorbent assays (ELISA) were completed on all 25 serum samples for five potential serum markers. In addition preliminary nuclear magnetic resonance (NMR) studies were conducted for the thyroid tissue samples.

**Results:** Twelve out of the 25 patients were diagnosed with PTC, twelve had benign pathology and one had medullary thyroid cancer. By comparing the serum of patients with PTC to those with benign pathology, the YKL-40 marker levels showed a mean of 55.6 ng/ml vs. 30.7 ng/ml (p-value <0.015), TIMP-1 levels showed a mean of 113.6 ng/ml and 74.5 ng/ml (p-value <0.08), Ang-1 levels showed a mean decrease of 7.8 ng/ml in the PTC group vs. 11.2 ng/ml in the benign group (p-value 0.038). The NMR experiments demonstrated significant variations between normal and abnormal thyroid tissues. Discussion: Several markers were tested in serum samples from patients with thyroid cancer and compared to those with benign diagnosis. We have obtained promising data for several of these serum markers, as well as demonstrating metabolic variations between normal and abnormal thyroid tissues using NMR studies. We believe that a combination of these markers could be used to reliably predict PTC in patients with thyroid lumps.

P016 (COSM Poster #38)

**STAGE-DEPENDENT EXPRESSION OF RNA-BINDING PROTEIN HUR IN ORAL CANCER.**

J K Byrd, MD, J Jin, B Carroll, A Liu, M B Gillespie, MD, V Palaniyam, PhD; Medical University of South Carolina.

**Objective:** The mRNA binding protein HuR is implicated in a diverse array of pathophysiological processes due to its effects on the post-transcriptional regulation of AU- and U-rich mRNAs. HuR has been shown to be upregulated in several human cancers including Head and Neck Squamous Cell Carcinoma (HNSCC). Although HuR expression has been shown to be up-regulated, it's staging and associated mRNA dynamics are not completely understood. Thus, the purpose of this study is to determine the expression level of HuR in oral cancer in stages I-IV, followed by their associated proliferative mRNAs such as COX-2, VEGF and TNF-. Design: 16 frozen tissue samples were taken from a tertiary care cancer center tissue bank and stained for HuR using

Poster Papers
immunohistochemistry. Cytoplasmic and nuclear levels of the protein were scored. Adjacent noncancerous tissue was taken from each sample for a control. RNA was extracted from the respective tissues and RT-PCR analysis of COX-2, VEGF and TNF- was carried out. **Subjects:** Adult patients who underwent treatment for squamous cell carcinoma of the oral tongue. **Results:** Preliminary data demonstrate that HuR is increasingly localized in the cytoplasm rather than the nucleus with increasing stage. Accordingly, VEGF, TNF- , and COX-2 mRNA levels were found to increase exponentially by RT-PCR. Scoring of the immunohistochemical staining and quantification of HuR by Western blotting is currently underway. **Conclusions:** Collectively, our data demonstrate that dominant role of HuR in oral cancer progression and correlated with increased COX-2, VEGF, and TNF- mRNAs.

**P017 (COSM Poster #39)**

**DNA COPY NUMBER-ASSOCIATED DIFFERENTIAL GENE EXPRESSION BETWEEN TUMOR CELLS FROM METASTATIC LYMPH NODES VS. THOSE FROM NODE-NEGATIVE PRIMARY TUMORS IN ORAL CANCER.** Eduardo Mendez, Chang Xu, Yan Liu, Wenhong Fan, Melissa P Upton, John R Houck, Pawadee Lohavanichbut, David R Doody, Neal D Futran, Lue P Zhao, Stephen M Schwartz, Pei Wang, Chu Chen; University of Washington/Fred Hutchinson Cancer Research Center.

To identify DNA copy number-associated gene expression changes that may play an important role in oral squamous cell carcinoma (OSCC) metastasis, we interrogated DNA and RNA isolated from tumor cells from metastatic lymph nodes (n=20) and those from non-metastatic primary tumors (n=17) using Affymetrix 250K Nsp single nucleotide polymorphism arrays and U133 Plus 2.0 expression arrays, respectively. After data normalization and filtering, 19,791 expression transcripts remained for analysis. Overall, copy number aberration (CNA) accounted for expression changes in about 48% of the transcripts studied. With a false positive rate < 5%, 1,985 transcripts were found to be differentially expressed between tumor cells from metastatic lymph nodes and those from node-negative primary tumors. Out of these, 114 were found to have a significant correlation between DNA copy number and gene expression (False Discovery Rate (FDR) <0.01). Among these 114 correlated transcripts, the corresponding genomic regions plus 250 kb upstream and downstream of each of 95 transcripts had CNA differences (FDR <0.01 by Wilcoxon rank test) between metastatic and non-metastatic tumor cells. These 95 transcripts (representing 87 genes) clustered around three genome locations: 3p25.3-22.1, 9p24.1-22.3 and 18q21.1-22.3. Ingenuity Pathway Analysis (IPA) of these 87 genes dysregulated in the tumor cells from metastatic lymph node revealed the top canonical pathway to be TGF- signaling through the over-accumulation of mRNA expression of SMAD2 and SMAD4. IPA analysis also revealed dysregulation of eight transcriptional regulators: ANHD1; CTNNB1; EOMES; FOX1; FOXP1; HIRA; MAKF; and PIA1S. Further investigation is warranted to confirm these findings and to examine the biologic role of these copy number-associated transcripts in OSCC metastasis and their potential as therapeutic targets.

**P019 (COSM Poster #41)**

**EFFECT OF ATORVASTATIN ON HEAD AND NECK CANCER METASTASIS.** Mozaffarul Islam, PhD, Theodoros N Teknos, MD; Dept. of Otolaryngology-Head and Neck Surgery and Comprehensive Cancer Center, The Ohio State University, Columbus, OH.

**Introduction:** Head and neck cancer is the sixth leading cause of cancer related deaths among people diagnosed with cancer. Previous studies in our laboratory have shown a strong correlation between elevated RhoC expression and lymph node metastasis in head and neck squamous cell carcinoma (HNSCC) patients. Furthermore, inhibiting RhoC activity using RNAi leads to a strong reduction in cell invasion (in vitro) and metastasis (in vivo). These studies suggest that inhibiting RhoC activity offers a possible therapeutic target that can be used to treat and prevent metastasis in patients diagnosed with HNSCC. Statins are a class of drugs that are used to reduce cholesterol levels in patients by inhibiting HMG-CoA reductase activity which in turns prevents mevalonate synthesis. Interestingly, the proper function and activity of Rho oncogenes (members of the Ras family of GTPases) also depends on prenylation. Significantly, it has been reported that metastasis in human melanoma can be reduced by the compound atorvastatin which inhibits RhoC activity by preventing geranylgeranylation of RhoC. Given that RhoC is a major protein involved in metastasis, we hypothesized Atorvastatin can reduce head and neck cancer metastasis by inhibiting RhoC activity. In this study, we treated HNSCC cell lines with different concentrations of atorvastatin and observed a significant reduction in cell motility. This will follow by a detailed functional study of RhoC activity in absence or in presence of atorvastatin so as to delineate its robustness as a potentially novel therapeutic target. **Methods:** Cell motility assays were done by scratch method in presence or absence of atorvastatin, and cell activator (GGPP), and geranylgeranylation transferase inhibitor (GTT1). The width of the scratch was measured first at 0h and afterwards at 24h to calculate the percentage of the gap covered by cells in this time period. **Results:** Our preliminary results show that Atovastatin decreases cell motility in a dose dependent manner. After twenty-four hours, a 37%, 75%, 76% and 79% decrease in cell motility was observed in cells treated with 1µM, 3µM, 5µM and 7µM atorvastatin respectively. In the cells treated with 5µM GPP, cell motility was enhanced with cells regaining 90% of the gap after 24hrs. Furthermore, when 5µM atorvastatin was added in presence of 10µM GPP, then cell motility was reduced with cells regaining only 25% of the gap, suggesting that atorvastatin antagonizes the prenylation effect of GPP. A decrease in cell motility was observed in cells treated with 1.5µM GGT1 with the cells regaining 55% of the gap after 24hrs. Interestingly, cells regained only 11% of the gap when treated with 1.5µM GTT1 and 5µM atorvastatin suggesting an additive effect by atorvastatin. The scratch assays of untreated cells regained more than 90% of the gap after 24hrs. **Conclusion:** Our results show that atorvastatin can inhibit cell motility in HNSCC cell lines by preventing geranylgeranylation of small GTPase proteins including RhoC. Therefore, this compound has the potential to prevent head and neck cancer metastasis by inhibiting RhoC activity and can prove to be an important therapeutic target in the treatment of head and neck cancer.
**P020 (COSM Poster #42)**

**MOLECULAR DISRUPTION OF RAD50 SENSITIZES HEAD AND NECK CANCER TO RADIATION THERAPY.** Shunsuke Miyamoto, MD, Hui Wang, PhD, Taku Yamashita, MD PhD, Bert W O'Malley Jr, MD, Daqing Li, MD; The University of Pennsylvania, School of Medicine, Department of Otorhinolaryngology-Head & Neck Surgery, Philadelphia, PA.

**Purpose:** Current combined external beam radiation therapy (XRT) and chemotherapy have demonstrated as a definitive or adjuvant therapy against advanced head and neck cancers. However, combined modality treatments often result in intolerable levels of toxicity to the patients. It has been well-known that enhanced DNA double strand break (DSB) repair is one of the most important mechanisms for developing radioresistance in the tumor cells and a protein complex consisting of Mre11, Rad50, Nbs1 (MRN) acts as a critical component in the repair of DNA DSB. The present study investigates if the use of targeted Rad50 disruption could sensitize the tumor cells to XRT for the treatment of human head and neck squamous cell carcinoma (HNSCC). Our goal is to establish a most effective treatment strategy while minimizing XRT morbidity for the HNSCC.

**Method:** Two human HNSCC tumor cell lines, JHU012 and JHU022, and nude mice as animal model were used in this study. A dominant-negative recombinant adenoviral vector containing mutant Rad50 (Ad-Rad50) was constructed. The tumors were treated with Ad-Rad50, replication-defective virus (DL312), or untreated as mock control and XRT at a dose of 2 Gy. Cell viability and tumor volume were evaluated to analyze anti-tumor activity of different treatment groups. Neutral comet assay was performed for quantification of DNA DSB damage. Apoptosis in tumor cells was evaluated by using immunohistochemistry.

**Result:** Our study demonstrates that targeted Rad50 disruption by Ad-Rad50 significantly interrupts the DNA DSB repairing and increases DNA damage associated with apoptosis in the tumor cells. Increased levels of tumor cell apoptosis were found associated with combined Ad-Rad50 and XRT treatment group. The combined Ad-Rad50 and XRT treatment demonstrated the best anti-tumor result relative to other groups both in vitro and in vivo.

**Conclusion:** The present study suggests that Ad-Rad50 gene transfer effectively interrupts DNA DSB repairing and results in inducing significant radiosensitization in the HNSCC tumor cells to XRT. This strategy is potentially applicable to advanced head and neck cancer in the human.

**P021 (COSM Poster #43)**

**EXPRESSION OF VEGF-C IN ORAL SQUAMOUS CELL CARCINOMA CORRELATES WITH SENTINEL LYMPH NODE LYMPHANGIOGENESIS.** HIROKI ISHIY, KAZUAKI CHIKAMATSU, KOICHI SAKAKURA, MASANORI MIYATA, NOBUHIKO FURUYA, KEISUKE MASUYAMA; Department of Otolaryngology-Head and Neck Surgery, University of Yamanashi, Gunma University.

**Objective:** The most important prognostic factor in patients with oral squamous cell carcinoma (OSCC) is regional lymph node metastases, which usually spreads first to the sentinel lymph nodes (SLNs). However, little is known about molecular mechanisms by which tumors spread to the lymphatic vessels, to the SLNs and distal lymph nodes. In this study, we investigated whether primary tumors induce lymphangiogenesis within SLNs in patients with OSCC.

**Method:** Twenty-three metastasis-negative SLNs obtained from 10 patients with OSCC were evaluated for the mRNA expression of VEGFR-3 and LYVE-1 using a real-time quantitative RT-PCR assay, and compared with control lymph nodes from 10 patients with non-cancerous diseases. We also investigated VEGF-C expression of the primary tumor by immunohistochemistry.

**Result:** In SLNs, there was highly significant correlation between the expression of two lymphatic markers examined. Notably, the level of LYVE-1 expression in SLNs, despite the absence of metastasis, was significantly higher compared with that in control lymph nodes. Moreover, SLNs from patients with VEGF-C-positive tumor showed significantly higher expression of VEGFR-3 than those from patients with VEGF-C-negative tumor.

**Conclusion:** Our results suggest that the primary tumor induces lymphangiogenesis in SLNs before metastasizing, and that VEGF-C may play an important role in the metastatic process of OSCC.
P024 (COSM Poster #46)
THERAPEUTIC TARGETING OF TRK SUPPRESSES TUMOR PROLIFERATION AND ENHANCES CISPLATIN ACTIVITY IN HNSCC. 
Turker Yilmaz, MD, Tilahun W Jifar, PhD, Gabriel de la Garza, Heather Lin, Jeffrey N Myers, MD PhD, Michael E Kupferman, MD, MD Anderson Cancer Center, University of Texas. Head and neck squamous cell carcinoma (HNSCC) is a biologically aggressive disease that has been modestly impacted by improvements in therapeutic strategies. Several lines of evidence support the role of TrkB for invasion and metastasis in various solid tumor models, and we have shown an important function of this receptor in HNSCC tumor biology. Therapeutic modulation of TrkB function has been supported in the literature by the development of small molecule inhibitors (SMI) with minimal success. To assess the validity of targeting TrkB in HNSCC, we tested a novel SMI, AZ64, and show significant dose and time-dependent inhibition of cellular proliferation in cell lines. Genetic studies revealed the specificity of this compound for the TrkB receptor, as exposure of cells that had genetic suppression of TrkB did not demonstrate abrogated oncogenic signaling. We next assessed the impact of AZ64 as a chemotherapeutic-sensitizer, and identified an enhancement of cisplatin-mediated anti-proliferation across all cell lines. We then demonstrated that AZ64 can overcome chemotherapay resistance in a novel model of cisplatin resistance in HNSCC. Modulation of the pro- oncogenic STAT3 and Src pathways was identified, suggesting molecular mechanisms of action for AZ64. In this study, we demonstrate the feasibility of targeting TrkB, and suggest a novel approach for the treatment of some chemotherapy-resistant HNSCC.

P025 (COSM Poster #47)
MASTER REGULATOR OR FIBROSIS EFFECTOR: OPTIMIZING THE TARGET IN RADIATION SKIN INJURY PREVENTION. 
Benjamin R Roman, MD, Sara B Immerman, MD, Judy W Lee, MD, Richard A Zoumalan, MD, Mark D DeLacure, MD FACS, Pierre B Saadeh, MD; New York University Langone Medical Center. 

Background: Radiation skin undergoes fibrotic changes due to activation of the transforming growth factor-B (TGFβ) cascade. A downstream effector is SMAD3, a nuclear transcription factor that directly activates genes involved in extracellular matrix production and the upstream master regulator, TGFβ1. In order to define the relative roles of TGFβ1 and SMAD3 in radiation injury, we inhibited both with transcutaneously-delivered small interfering RNA (siRNA). Methods: The dorsal skin of FVB wild-type mice was isolated and radiated (45Gy). TGFβ1, SMAD3, or nonsense siRNA was delivered using an agarose-based delivery matrix to two separate dorsal skin areas immediately after radiation and every five days thereafter. Skin was harvested after 4 or 8 weeks. TGFβ1 and SMAD3 expression was assessed by hematoxylin and eosin (H&E) staining, immunohistochemistry (IHC), Western blot, and RT-PCR. Radiation-induced fibrosis was measured quantitatively via tensiometry to calculate Young's modulus, a measure of rigidity. Results: Murine skin treated with topical SMAD3 or TGFβ1 siRNA demonstrated effective inhibition of these genes at week 4 and persistent suppression at week 8. Grossly, when compared to the TGFβ1 and nonsense siRNA groups, the SMAD3 group exhibited substantially slower progression of radiation injury (i.e. erythema to dry desquamation to wet desquamation). On H&E, fibrotic changes including collagen deposition and epidermal thickening were significantly decreased in SMAD3 groups compared to controls. Interestingly, TGFβ1 siRNA did not change the tissue architecture compared to control. TGFβ1 silencing resulted in blunted SMAD3 levels (Western blot/ RT-PCR) whereas SMAD3 silencing revealed near complete knockdown of itself. Tensiometry showed decreased tension in SMAD3 siRNA-treated skin as compared to nonsense siRNA (Young's modulus of 9.29 MPa vs. 14.68 MPa; normal non-radiated skin was 7.78 MPa). TGFβ1 siRNA similar to nonsense. Conclusions: Only SMAD3 silencing has a positive phenotypic and histologic effect on skin fibrosis. While the entire TGFβ cascade is activated by radiation, SMAD3 may be the critical mediator of radiation-induced skin damage.

P026 (COSM Poster #48)
LOCALIZED GENE SILENCING IN THE SKIN USING INTRA AND TRANSCUTANEOUS DELIVERY OF siRNA. 
Benjamin R Roman, MD, Sara Immerman, MD, Richard A Zoumalan, MD, Judy W Lee, MD, Stephen M Warren, MD, Mark D Delacure, MD, Pierre B Saadeh, MD; NYU Langone Medical Center. 

Background: Intra and transcutaneous drug delivery has evolved rapidly, with routine applications in dermatologic and systemic diseases. Concomitantly, siRNA has been used in the laboratory setting for molecular pathway research, but has only recently been brought to bear directly on diseases in vivo. Our research pairs these efforts to deliver siRNA to the skin, an organ readily amenable to topical therapy and beset by a vast array of targetable genetic derangements, including head and neck cancer, skin cancer, and radiation fibrosis. We demonstrate a novel method in a murine model of removing the stratum corneum to improve penetration, followed by a novel method of siRNA delivery to the skin. Methods: The dorsal skin of wild-type FVB mice was shaved/depilated. Experiments involving tape, ethanol, glycolic acid, phenol, and various doses of Triton-X identified the ideal pretreatment reagent. The stratum corneum was removed using this reagent, and naked siRNA (500 pmol) was delivered in an agarose matrix delimited in a hydrocolloid cutout and covered with a hydration-enhancing semi-occlusive dressing. Knockdown of a housekeeping gene (MAPK1) was evaluated (immunohistochemistry [IHC], western blot, and RT-PCR). These techniques were then applied to a murine model of radiation-induced skin fibrosis to inhibit SMAD3, a key mediator of fibrosis. Results: H&E staining demonstrated that the stratum corneum was most effectively removed by 1% Triton X-100 after 4 hours. IHC demonstrated near complete full-thickness MAPK1 inhibition by 24 hours, with return to normal by 14 days. A similar time course of MAPK1 inhibition was confirmed by western blot and RT-PCR. SMAD3 siRNA pretreatment largely abrogated the dramatic increase in SMAD3 normally associated with 2GGy irradiation of murine skin (IHC/RT-PCR). Downstream effectors of extracellular matrix deposition and fibrosis were similarly reduced. Conclusions: We demonstrate a novel method of temporary, local gene silencing in the skin by knocking down a housekeeping gene, as well as reversing molecular and histologic changes associated with radiation-induced skin injury. Cutaneous siRNA delivery has the potential to impact the treatment of a variety of diseases in the head and neck.

P027 (COSM Poster #49)
ONCOGENIC RAS ACTIVATION ENHANCES CELL PERMISSIVENESS TO INFECTION AND ONCOLYSIS BY VACCINIA VIRUS. 
Babak Givi, MD, Chun-Hao Chen, MD, Pingdong Li, MD, Sen Li, Daniel L Price, MD, Nanhai Chen, PhD, Yong A Yu, PhD, Qian Zhang, MD PhD, Aladar A Szalay, PhD, Yuman Fong, MD, Richard J Wong, MD; Department of Surgery, Memorial Sloan-Kettering Cancer Center, New York, NY; Genelux Corporation, San Diego Science Center, San Diego, CA. 

Background: Mutations of Ras may activate signaling pathways that affect cell proliferation, migration, cytoskeletal structure, and result in oncogenic transformation. Oncogenic Ras mutations are found in approximately 20% of all human cancers, including head & neck and thyroid cancers. Oncolytic vaccinia virus possesses a remarkable ability to selectively infect, replicate within, and lyse cancer cells in animal models. However, the cancer cell characteristics that promote their increased susceptibility to viral infection over normal cells have not been elucidated. Our goal was to assess if oncogenic Ras activity is a determinant of cell permissiveness to vaccinia viral oncolysis. Methods: A replication-competent, engineered vaccinia virus (GLV-1h68) expressing green fluorescent protein (GFP) and beta-galactosidase (β-gal) was used to infect Madin-Darby canine kidney (MDCK) cells or RasV12-transformed MDCK cells (MDCK-Ras) at a multiplicity of infection (MOI) of 5, 10 or 20. Early gene expression was compared by assessing GFP, B-gal, and E3L viral protein production. Viral proliferation was assessed by plaque assays. Cell viability assays were performed to compare cytotoxicity susceptibility. Small molecule inhibitors of MEK (PD98059), PI3K (LY 294002), and mTOR (rapamycin) were added to assess the contributions of these signaling pathways to viral gene expression. Results: MDCK-Ras cells consistently exhibited significantly greater permissiveness to vaccinia infection and gene expression than MDCK cells. MDCK-Ras exhibited robust GFP
expression at 8 hours post-infection, in comparison to 16 hours for MDCK cells. B-gal expression was more than five-fold higher in MDCK-Ras cells than MDCK cells at 8 hours post-infection, and three-fold higher at 16 hours. The vaccine protein E3L was expressed at 2 hours post-infection in MDCK-Ras cells, in comparison to 6 hours post-infection in MDCK cells. Vaccinia replication was two-fold higher in MDCK-Ras cells than in MDCK cells at all MOIs tested. MDCK-Ras cells were also consistently more susceptible to vaccinia oncolysis. MDCK-Ras cells were completely non-viable by 5 days post-infection at MOI 5, and by 3 days at MOIs 10 and 20. In contrast, MDCK cells remained 40% viable by 5 days post-infection at MOI 5, and 25% and 10% viable by 3 days at MOIs 10 and 20, respectively. The PI3K inhibitor, LY294002, reduced B-gal expression by GLV-1h68 in a dose dependent manner for both MDCK-Ras (60%) and MDCK (90%) cells. PD98059 and rapamycin reduced B-gal expression by <35% for both cell lines. 

Conclusion: Ras oncogene activation significantly enhances cell permissiveness to vaccinia viral infection, gene expression, replication, and oncolysis. Inhibition of PI3K significantly impeded viral gene expression, suggesting a key role for this pathway in supporting vaccinia oncolysis. These findings suggest that SphK1 and PI3K might be particularly appropriate targets for therapy, and may lead to the selection of such patients for therapy in future clinical trials using this vaccinia virus.

**P028 (COSM Poster #50)**

**GOLD NANOROD-SIRNA NANOCOMPLEXES: A NOVEL THERAPEUTIC TOOL FOR RADIOSENSITIZATION OF HEAD-AND-NECK CANCER.** Victor J Schorn, BS, Christian Hochstim, MD PhD, Kamil Masood, Ken-Tye Young, PhD, Indrajit Roy, PhD, Paras N Prasad, PhD, Ellis Meng, PhD, Uttam K Sinha, MD; University of Southern California.

Background: Sphingosine kinase 1 (SphK1) is an important regulator of apoptosis, survival, and proliferation in cancer cells. SphK1 expression in head and neck squamous cell cancer (HNSCC) cell lines and tumor tissue is assessed, and the efficacy of SphK1 knockdown in increasing tumor radiosensitivity is evaluated in vitro and in vivo. Methods: Expression of SphK1 was determined by immunohistochemistry, Immunofluorescence, Western blot, and Real time PCR in 34 prospectively collected HNSCC tumor samples. HNSCC cell lines were treated with siRNA targeting SphK1 with and without radiation, and cell viability was assessed. Here, we also report the development of a gold-nanorod (GNR) based non-viral system for delivery of therapeutic SPK siRNAs (nanoplex), which will render protection of the siRNAs from physiological degradation, as well as facilitate their delivery to target cells in vitro and in vivo. Results: SphK1 is found in both HNSCC cell lines and human tumor samples, with higher expression correlated with advanced tumor stage, nodal involvement, and recurrence. Using a wireless operated, implantable microelectronic mechanical system (MEMS) pump, we have achieved sustained intratumoral delivery of the nanoplexes to implanted tumors in a xenograft animal model. Mice treated with nanoplexes were shown to have reduced tumor size compared to both nonradiated control and radiated control mice, while mice with both nanoplexes and radiation treatment showed a synergistic reduction in tumor volume. Histopathologic analysis demonstrated a decreased proliferative index (Ki67), Caspase 3, and SphK1 expression. Conclusions: SphK1 is upregulated in HNSCC, and inhibition of SphK1 sensitizes HNSCC to radiation induced cytotoxicity.

**P029 (COSM Poster #51)**

**THE EFFECT OF VEGF ON SURVIVAL OF A MICROVASCULAR FREE FLAP IN A RAT MODEL.** Kathryn Rosenberger, MD, Yelizaveta Shnayder, MD, Dianne Durham, PhD, Kevin Sykes, MPH, Sarah Schroeppe1, BGS; University of Kansas Medical Center Department of Otolaryngology- Head and Neck Surgery.

Purpose: This study evaluated whether application of vascular endothelial growth factor (VEGF) would improve and possibly accelerate survival of rat microvascular free flaps, reducing the time interval in which the flap is dependent on the vascular pedicle. Methods: A groin free flap based on the epigastric artery was raised in eleven Sprague-Dawley rats. The artery was divided and microvascular anastomosis was performed. Rats were randomly assigned to one of two groups receiving daily subcutaneous injections of vascular endothelial growth factor at a concentration of 1µg/kg (n= 5) or saline (n= 6) as a control. The investigator was blinded to treatment group throughout the experiment. Daily blood flow measurements were obtained using a laser Doppler probe to assess microvascular circulation of the flap at several points around the perimeter and in the mid portion of the flap. These measurements were compared to the skin of the contralateral, unoperated groin as a control. Vascular pedicle of the flap was ligated with a nylon suture on post operative day 5, 7, or 10 to interrupt blood supply from the pedicle. The skin flap was monitored both visually and with the Doppler probe for two more days after pedicle ligation. The tissue was then harvested for histology. Results: All eleven groin free flaps were viable at the time of tissue harvest. No necrosis was observed after ligation of the vascular pedicle on post-operative day 5, 7, or 10. Analysis of blood flow measurements revealed a significantly increased blood flow in the flaps treated with VEGF on post-operative day 5 (p=0.003) and 7 (p=0.003) versus saline controls. Blood flow was decreased when measured two days after pedicle ligation in each group, but the flaps treated with VEGF continued to have higher blood flow measurements on day 5 (p=0.064) and 7 (p=0.013) when compared with controls and returned for a participation rate of 42%. Two peridox, all microvascular free flaps survived after ligation of the vascular pedicle on day 5 or later. Administration of VEGF significantly increased blood supply in free flaps even after ligation of the vascular pedicle, demonstrating neoangiogenesis. This will be further investigated upon analysis of histology slides for capillary density and then correlated to blood flow measurements.
P031 (COSM Poster #53)
NON-SURGICAL MANAGEMENT OF OROPHARYNGEAL, LARYNGEAL AND HYPOPHARYNGEAL CANCER: THE FOX CHASE CANCER CENTER EXPERIENCE. Genevieve Andrews, MD, Miriam Lango, MD, Roger Cohen, MD, Steven Feigenberg, MD, Ranne Mehra, MD, Barbara Burtness, Sidra Ahmed, BS, Nicos Nicolaou, MD, John Gaughan, PhD, John A Ridge, MD PhD; Fox Chase Cancer Center.

Objective: To characterize contemporary trends in clinical outcomes of patients with oropharynx, larynx and hypopharynx cancer treated at one tertiary care cancer center. Methods: Retrospective single institution cohort study. Results: Review of 180 patient records from 1993-2004 revealed that the number of patients with oropharyngeal cancer treated nearly doubled while the number of patients with laryngeal and hypopharyngeal cancers declined (p=0.006). Since 2000, concurrent chemotherapeutic regimens rather than radiation alone became the dominant treatment approach for advanced stage disease, with associated improvements in recurrence-free and overall survival (p=0.009, and p=0.006, respectively). Stratification by tumor site, however, revealed survival benefits were limited to oropharyngeal and hypopharyngeal cancer patients, while no significant improvement was observed in laryngeal cancer patients. In the multivariate analysis, T stage (p=0.0001) and chemotherapy use (p=0.0001) were associated with improved survival. The recurrence-free survival of non-smokers was better than for former or current smokers (p=0.01) but was accounted for by the earlier T-stage of non-smokers on presentation in the multivariate analysis (p=0.0001). Local relapse has remained the predominant initial site of failure for oropharyngeal cancer (14 of 17 relapses or 82%) but not laryngeal cancer (3 of 7 relapses or 42%). Compared to laryngeal cancer patients, those with oropharyngeal recurrences were less likely to undergo surgery with curative intent (p=0.02) and were less likely to achieve locoregional control after disease recurrence. Conclusion: The survival of oropharyngeal cancer patients treated at our institution has improved over the last 15 years, which is likely related to changes in treatment and tumor biology. Patients with locally advanced vs. earlier T-stage oropharyngeal cancer are more likely to have a tobacco-related malignancy and are at relatively higher risk of local failure.

P032 (COSM Poster #54)
THE CHANGING TRENDS OF TONSILLAR CANCER EPIDEMIOLOGY IN SOUTH EAST ENGLAND: 1987 – 2006. Olaide Olaleye, MRCS DOHNS MPH; Ram Moorthy, FRCS ORLHNS, Owen Lynne, PhD, Myles Black, FRCS ORLHNS, David Mitchell, FRCS, Jill Wiseberg, PhD; William Harvey Hospital, Ashford Kent, United Kingdom.

Introduction: The incidence of palatine tonsil cancer (TC), unlike some other head and neck tumours, has been increasing worldwide, as demonstrated in current literature. The population of the South East of England (comprising London, Kent, Surrey and Sussex) is approximately 12 million people. It provides a unique opportunity to study the changing epidemiology of TC in the most ethnically and socially diverse region of the United Kingdom. Studying these changes is of immense value to understanding the nature of the disease, develop prevention strategies, improve early diagnosis and guide resource allocation. Aim: To analyse the changing epidemiology of TC in SE England over a 20 year period, 1987 – 2006. Methodology: A retrospective, quantitative study using secondary anonymised data obtained from the Thames Cancer Registry 1987 – 2006.

Figures:
- Age at Diagnosis: Mean 60.4 years, Std Dev. 12.15; Range: 18.8 - 94.4 years; 1987 - 2006: 61.55 years, Std Dev. 12.57; 1997 - 2006: 59.64 years, Std Dev. 12.15; Range: 18.8 - 94.4 years; 1987 - 2006, p<0.01.
- Gender: 1987 - 2006: Males 1,292 (72%), females 502 (28%); 1987 - 2006: Males 1,292 (72%), females 502 (28%); 1997 - 2006: Males 437 (67.8%), females 208 (32.2%); 1997 - 2006: Males 437 (67.8%), females 208 (32.2%);
- Incidence: TC incidence increased over 20 years and peaked in 2006; Range: 5.09 - 14.45 cases per 100,000; Mean 8.0, Std Dev 2.64; Incidence was highest in the age group 40 – 60 years, particularly males. Synchronous Tumours: 122 (6.8%) with TC had synchronous tumours. Survival Analysis: 78 TC registrations were excluded as they were death certificate only registrations; 997 registrations had died; 471 (1987 – 1996) and 526 (1997 – 2006): 719 of cases were still alive as of July 2008. 125 (1987 - 1996) and 594 (1997 - 2006).
- Median Survival Times: 1987 - 2006: 4.36 years (95% C.I.3.64 - 5.08); 1987 - 1996: 2.74 years (95% C.I.2.19 - 3.28); 1997 - 2006: 5.72 years (95% C.I.4.38 - 7.06).

Discussion: A number of hypotheses to explain the rising incidence of TC include the documented increase transmission of human papilloma virus, improved referral pathways, improved diagnostic strategies and campaigns to reduce alcohol consumption and smoking. Conclusion: TC incidence has increased in SE England between 1987 – 2006, consistent with a worldwide trend. TC remains more common in men than women. Further studies are needed to investigate possible hypotheses explaining the increasing incidence.

P033 (COSM Poster #55)
NECK DISSECTION AFTER CHEMORADIATION - TIMING AND COMPLICATIONS. Laura A Goqueen, MD FACS, Claudia I Chapuy, MD, Yi Li, Shiah D Zhao, Donald J Annino, MD DMD; Brigham and Women's Hospital and Dana Farber Cancer Institute, Boston, MA, USA.

Background: Chemoradiation therapy (CRT) for head and neck cancer is very effective at eradicating disease at the primary site but its ability to eradicate neck lymph node metastasis has been less certain. Patients undergo computed tomography (CT) and positron emission tomography-computed tomography (PET-CT) after chemoradiation therapy and if these studies show abnormal lymph nodes then patients are advised to undergo a neck dissection (ND). The timing of post CRT neck imaging is controversial. CT and PET-CT are considered to be more accurate at 12 weeks after CRT. However concern has been raised regarding increased surgical complications and diminished survival parameters when ND is delayed >12 weeks after CRT. Objective: Determine the incidence of post CRT ND complications and ascertain whether timing, <12 weeks vs. >12 weeks, or other factors are associated with increased complications. Determine if ND timing negatively impacts survival parameters. Study Design: Ten year retrospective review of surgical complications sustained by head and neck cancer patients undergoing ND after CRT. Materials/Methods: 105 patients were identified. Sixty eight NDs were performed <12 weeks and 37 NDs >12 weeks after CRT. Operative, inpatient and outpatient notes were reviewed and complications identified. Survival parameters were assessed. Results: The incidence of complications among the <12 week ND and the >12 week ND patient groups was as follows: major wound complications 8/68 (11.8%) vs. 1/37 (2.7%) p=0.15, minor wound complications 11/68 (16.2%) vs. 4/37 (10.8%) p=0.57, airway complications 7/68 (10.3%) vs. 2/37 (5.4%) p=0.49, systemic complications 9/68 (13.2%) vs. 2/37 (5.4%) p=0.32. In each category of complication there were fewer complications among the patients undergoing ND >12 weeks after CRT but the differences did not reach statistical significance. The number of complications per patient and the number of patients with at least one complication were less in the >12 week ND group (p=0.05 and p=0.04). There were no significant differences in overall survival (p=0.89), progression free survival (p=0.90) and regional relapse (p=0.53) between the <12 week and the >12 week ND groups. Conclusions: Patients undergoing ND >12 weeks after CRT had less surgical complications compared with patients undergoing ND <12 weeks. Neck dissection performance >12 weeks after CRT. However concern has been raised regarding increased surgical complications and diminished survival parameters when ND is delayed >12 weeks after CRT. Objective: Determine the incidence of post CRT ND complications and ascertain whether timing, <12 weeks vs. >12 weeks, or other factors are associated with increased complications. Determine if ND timing negatively impacts survival parameters. Study Design: Ten year retrospective review of surgical complications sustained by head and neck cancer patients undergoing ND after CRT.

Materials/Methods: 105 patients were identified. Sixty eight NDs were performed <12 weeks and 37 NDs >12 weeks after CRT. Operative, inpatient and outpatient notes were reviewed and complications identified. Survival parameters were assessed. Results: The incidence of complications among the <12 week ND and the >12 week ND patient groups was as follows: major wound complications 8/68 (11.8%) vs. 1/37 (2.7%) p=0.15, minor wound complications 11/68 (16.2%) vs. 4/37 (10.8%) p=0.57, airway complications 7/68 (10.3%) vs. 2/37 (5.4%) p=0.49, systemic complications 9/68 (13.2%) vs. 2/37 (5.4%) p=0.32. In each category of complication there were fewer complications among the patients undergoing ND >12 weeks after CRT but the differences did not reach statistical significance. The number of complications per patient and the number of patients with at least one complication were less in the >12 week ND group (p=0.05 and p=0.04). There were no significant differences in overall survival (p=0.89), progression free survival (p=0.90) and regional relapse (p=0.53) between the <12 week and the >12 week ND groups. Conclusions: Patients undergoing ND >12 weeks after CRT had less surgical complications compared with patients undergoing ND <12 weeks. Neck dissection performance >12 weeks after CRT did not negatively influence survival parameters. These findings indicate that neck imaging can be delayed until 12 weeks after CRT and ND can be safely performed thereafter without adverse impact on surgical complications or survival parameters.

P034 (COSM Poster #56)
FUNCTIONAL MRI OF TONGUE MOTOR TASKS IN PATIENTS WITH TONGUE CANCER: OBSERVATIONS BEFORE AND AFTER PARTIAL GLOSSECOTOMY. Samantha Hauppage, Kyung K Peck, PhD, Ryan C Branski, PhD, Meier Hsu, MS, Andrei Holodny, MD, Dennis Kraus, MD; Memorial Sloan-Kettering Cancer Center.

Objectives: In order to maintain oral nutrition, patients treated with partial glossectomy must adapt to altered anatomy which likely involves substantive contributions from the central nervous system.
RENDEZVOUS.

TREATMENT OF HEAD AND NECK CANCER USING DILATION BY rendezvous were performed on 15 patients. Average followup was 6 months after partial glossectomy. Data obtained were compared to nine healthy controls. Functional studies were performed in a 1.5T Scanner GE Signa LX Scanner (GE Medical System, Milwaukee, WI) with a standard birdcage head coil. Image processing and analysis were performed with AFNI software. Functional block-design paradigms included: 1) Tongue tapping, 2) Dry swallowing, and 3) Bolus swallowing. For whole brain analysis, activation across different brain regions between pre- and post-surgical scans was qualitatively compared by a board-certified neuroradiologist who visually detected areas in which activation varied between tasks. In addition, ten voxels with the greatest activation within the tongue movement-associated region were selected from each task, averaged, and used to generate corresponding BOLD signal percent change maps. Results & Conclusions: Following glossectomy, increased activation was observed in the superior parietal lobule, superior frontal gyrus, inferior frontal gyrus, and anterior cingulate. These areas of increased cortical activation following surgery are involved with planning, movement, and sensation of the tongue during swallowing. The premotor cortex and the parietal cortex may function synergistically in planning and execution, and integrating sensory and motor input to control and manipulate objects. Similarly, the supplementary motor area (SMA), located in the superior frontal gyrus, is involved in motor planning of complex sequential movements. Given the complexity of swallowing, increased SMA activation is expected. The inferior frontal gyrus is believed to be activated prior to swallowing and may control nonspeech orofacial sensorimotor behaviors. Following surgery, increased activation in the inferior frontal gyrus may contribute to the cognitive processes involved in swallowing. The anterior cingulate cortex (ACC) has been suggested to mediate emotional response to pain and be involved in initiating voluntary swallowing. New ACC activation following surgery may be attributed to pain during the different fMRI tasks, and/or subjects requiring increased attention to swallowing due to the altered anatomy. Region of Interest (ROI) analysis of the precentral gyrus confirmed increased cortical activity following surgery. This finding may suggest that these patients may experience some normalization of tongue function following resection. Furthermore, comparisons between pre-surgical scans and controls suggested the dry swallow task was sensitive to eliciting tongue-related activation in the precentral gyrus (p<0.05). However, we also acknowledge that the relatively small sample size may also impact these findings. The implications of these findings may contribute to our increased insight into the role of the CNS and ultimately direct rehabilitation strategies for patients with swallowing disorders.

P037 (COSM Poster #59)
DEFINITIVE SURGICAL MANAGEMENT OF MANDIBULAR OSTEORADIONECROSIS WITH MICROVASCULAR FREE FLAP RECONSTRUCTION: COMPLICATIONS, FUNCTIONAL OUTCOMES, AND COST. Mark E Zafereo, MD, Brandon L Christianson, BA, Diana B Roberts, PhD, Beth M Beadle, MD, Mark S Chambers, DDS, Jan S Lewin, PhD, Randal S Weber, MD; University of Texas MD Anderson Cancer Center.

Objective: To describe complications, functional outcomes, and cost associated with mandibullectomy and free flap reconstruction for mandibular osteoradionecrosis (ORN). Methods: Medical records of 60 consecutive patients who underwent mandibullectomy and free flap reconstruction for mandibular ORN at a single tertiary care institution between 2000 and 2006 were retrospectively reviewed. Results: Forty-two males and 16 females underwent mandibullectomy and free flap reconstruction a mean of 69 months following completion of radiation therapy (mean radiation dose, 63 Gy). Fifteen patients (30%) were reconstructed with one free flap, while 45 patients (90%) required two simultaneous free flaps. Five patients (8%) required a pectoralis major pedicled flap in addition to a free flap. Microvascular free flap reconstruction included fibula (45 patients), anterolateral thigh (11), rectus abdominis (5), radial forearm (3), and lateral arm (2). There were 2 (3%) perioperative deaths, and 39 patients (65%) experienced postoperative complications including 8 fistulas, 3 plate exposures, 2 carotid artery blowouts, 3 partial flap losses, and 6 total flap losses. Twenty-five patients (42%) required at least one subsequent surgery to subsequent exploratory laparotomy. One patient lost an incisor during the procedure. Conclusions: Complete esophageal stricture following radiation is a difficult problem to manage. Dilation by rendezvous does offer benefit to most patients and is a reasonable starting point for managing this problem. However, significant risks are associated with the procedure that should be carefully considered by the clinician and patient.
manage postoperative complications, and 16 patients (27%) required at least two subsequent surgeries. Nine of these patients underwent a subsequent free flap (7 patients) or pectoralis flap (2 patients). Patients with larger defects (> 7 cm) and longer time interval since radiation (> 2 years) were more likely to experience complications (p = 0.03 and p = 0.03, respectively). Patients with longer time interval since radiation, as well as current smokers, were also more likely to require subsequent operations to manage complications (p = 0.03 and 0.04, respectively). Forty-seven patients (78%) were able to attain at least 80% speech intelligibility, and 41 patients (68%) achieved an oral diet without a gastroscope tube. With a mean follow-up time of 26 months, 44 patients (73%) were alive and 16 patients (27%) had died. Conclusions: Patients with mandibulotomy ORN suffer higher morbidity than other head and neck cancer patients undergoing similar major resections and free flap reconstructions. Smoking, larger defects, and longer time interval since radiation may increase risk of significant postoperative complications. Our findings suggest that mandibulectomy and free tissue transfer can be successful in the treatment of ORN, but there may be significant challenges in the postoperative management. Early surgical treatment should be considered as expectant management may be associated with increased complications.

P039 (COSM Poster #61) EFFICACY OF POST-CHEMORADIATION SELECTIVE NECK DISSECTION AS A SALVAGE INTERVENTION FOR CLINICALLY PERSISTENT NODAL DISEASE.
Muthuswamy Dhiwakar, MD, Thomas Robbins, MD, Francisco Vieira, MD, James Malone, MD, Krishna Rao, MD PhD; Southern Illinois University School of Medicine, Springfield, IL and The University of Tennessee Health Science Center, Memphis, TN.
Background: Selective neck dissection (SND) is becoming more commonly used in the multimodal treatment for squamous cell carcinoma of the head and neck (SCCHN). However, there is a paucity of data to support its application specifically as an effective salvage intervention following chemoradiation. Objective: To determine the rate of regional recurrence among patients with SCCHN who had a post-chemoradiation SND for early salvage of clinically persistent nodal disease. Methods: Retrospective analysis of patients with SCCHN treated with definitive chemoradiation at 2 academic centers. A total of 62 patients subsequently underwent 69 SNDS as salvage for clinically persistent nodal disease and were selected for analysis. The median time interval between completion of chemoradiation and neck dissection was 10 weeks. The rates of regional recurrence and recurrence-free survival were determined. Results: Among the neck dissection specimens, there was pathological evidence of residual tumor in 34 (49%). Over a median follow-up of 31 months, 40 (65%) patients remained free of disease, while the rest developed recurrence. Failures were due to recurrence at the primary site in 7 (11%) patients, in the neck in 4 (6%) patients, and at distant sites in 11 (18%) patients. All 4 regional recurrences were isolated to the neck without associated disease at the primary site. Of these, only 1 occurred in the ipsilateral targeted neck. Conclusion: Salvage SND appears to be an effective intervention to control persistent nodal metastases in patients treated with chemoradiation for SCCHN.

P038 (COSM Poster #60) STROBOSCOPY IN STAGING OF LARYNGEAL CARCINOMAS.
Matthew H Rigby, MD, Jason Orlic, MD, Paul Hong, FRCS, MD, Timothy Brown, FRCS, MD, Jonathan Trites, FRCS, MD, Robert Hart, FRCS, S. Mark Taylor, FRCS, FACS MD; Dalhousie University Division of Otolaryngology.
Introduction: Squamous cell carcinoma of the glottis is the second most common head and neck cancer. Clinical staging of laryngeal cancers is of important in determining a patient’s prognosis and the course of treatment. This is usually done with a flexible laryngoscope and requires visualization of vocal cord involvement, extension to the subglottis or supraglottis, and presence or absence of vocal cord fixation. Stroboscopy allows better assessment of the mucosal wave, and it may be more sensitive to detecting deeper invasion of tumour, and decreased vocal cord mobility. As stroboscopy was felt to provide more information, its correlation of stroboscopic staging to operative staging was compared to the correlation of conventional staging with operative staging. The interrater reliability of stroboscopy to stage glottic cancer was also assessed. Methods: 55 patients with glottic cancer underwent recorded pre-operative laryngeal stroboscopy in addition to conventional staging in the clinic. The patients were then staged at time of tumour resection with CO2 laser. The stroboscopy videos were independently viewed and staged by two fellowship trained head and neck surgeons who were blinded to the pre- and post-operative staging. Kendall’s tau-b test was used to evaluate the agreement amongst staging techniques (operating room staging, clinical staging, and stroboscopic staging). Interobserver agreement in the stroboscopy staging was evaluated using the intra-class correlation coefficient. Results: 49 patients completed clinical, stroboscopic and operative staging. Using operative staging the cases were staged as follows: 14 T1A, 3 T1B, 28 T2, 4 T3. There was excellent interrater agreement between two surgeons using stroboscopy to stage glottic lesions with an intra-class correlation coefficient of 0.90. Clinical staging was adequately correlated with OR staging (r=0.746). Clinical staging had a higher agreement with OR staging than both of the surgeon’s using stroboscopy staging (r=0.532 and r=0.519) which only had a weak correlation with OR staging. Conclusion: The use of stroboscopy allowed two experienced observers to stage glottic carcinomas similarly. However, staging with stroboscopy did not correlate well with conventional clinic staging, nor with operative staging, which remains the gold standard.

P040 (COSM Poster #62) CLINICOPATHOLOGIC FEATURES ARE STRONGER PROGNOSTIC FACTORS THAN HISTOLOGY OR GRADE IN RISK STRATIFICATION OF PRIMARY PAROTID MALIGNANCIES.
Rohan R Walvekar, MD, Pedro A Andrade Seethala, MD, Raja R Seethala, MD, William E. Stading, MS, Dwight E Heron, MD, Jonas T Johnson, MD, Robert L Ferris, MD PhD; LSU Health Sciences Center, New Orleans, LA 70112 and University of Pittsburgh School of Medicine and Cancer Institute, Pittsburgh, PA 15213.
Objective: To determine the relative contribution of clinicopathologic risk factors versus low- and high-risk grade histologic groups to assist management of primary parotid cancers. Study Design: Retrospective chart review. Methods: 168 primary parotid malignancies were treated surgically at a tertiary care center from 1982 to 2005. Of these, 115 patients with complete follow up information were further analyzed. Pathologic updating and re-classification in 28% of cases enabled comparison of tumor histology or grade with current consensus criteria. Clinical outcomes of high- and low-risk histology and grade were compared with the influence of traditional clinicopathologic risk factors. Results: Of 115 cases, the male:female ratio was equal and the median age was 63 years (range, 15 to 89 years). Mucoepidermoid carcinoma (n=28) was the most common histology. The median follow-up was 44 months (range, 0 to 278 months). 40% of low-risk histology patients vs 19% of high-risk histology patients had disease recurrence. The median time to recurrence was not reached for low-risk tumors as compared to 29 months for high-risk tumors (p = .0001). Interestingly, extracapsular spread (ECS) and margin status were independent prognostic factors and conferred significantly greater prognostic value than histologic grade risk group. Disease free survival (DFS) and overall survival (OS) at 5-years for the entire cohort was 51% and 57%, respectively. Risk group was a strong independent predictor of OS but not DFS. Conclusions: Risk group defined by histology and grade was associated with disease-free survival. ECS and margin status were independent predictors of disease-free survival. Inclusion of ECS and margin status substantially improved the prediction of disease recurrence, supporting elective neck dissection and post-operative radiotherapy for high-grade tumors or low risk histologies with positive margins or ECS.

P041 (COSM Poster #63) PREDICTORS IN OUTCOME OF MUCOEPIDERMOID CARCINOMA OF THE SALIVARY GLAND.
Catherine H McHugh, MD, Dianna B Roberts, PhD, Adel K El-Naggar, MD, Kupferman E Michael, MD; The University of Texas MD Anderson Cancer Center Department of Head and Neck Surgery, Baylor College of Medicine Department of Otolaryngology Head and Neck Surgery.
Title: Predictors of Outcome in Mucoepidermoid Carcinoma of the Salivary Gland. Background: Mucoepidermoid carcinoma (MEC) is the most common malignancy of the major and minor salivary glands. The behavior of MEC has been historically difficult to predict, but prior reports demonstrate histologic grade and tumor stage as important
prognostic factors. To assess the impact of clinical and pathological findings on disease outcomes, we analyzed patients treated for MEC at a high volume cancer center to evaluate for additional prognostic indicators to help clarify the disease process further. Methods: A retrospective clinical review of all patients with MEC of the salivary glands treated at a tertiary cancer center from 1990 to 2007 was performed. Patients with less than 2 years of follow-up were excluded. Statistical analysis was used to investigate relationships between clinical and pathologic characteristics and survival. Results: One hundred twenty five patients with a diagnosis of MEC were analyzed. There was a slight female predominance with 68 (54.4%) females and 57 (45.6%) males. The majority of cases of MEC were found in the parotid gland (86.4%) followed by the submandibular gland (12%). Histologically, there were 24% low-grade (LG), 44% intermediate-grade (IMG), and 32% high-grade (HG) tumors. The 5 year overall survival (OS) and disease free survival (DFS) of all patients were 79.3% and 76.5% respectively. Facial nerve palsy, skin involvement, fixed tumor, rapid growth, and a submandibular gland location were found to be poor prognostic factors. No difference in OS or DFS was found between LG and IMG tumors. T1 and T2 tumors together had an OS and DFS of 93.6% and 88.0% whereas T3 and T4 tumors had significantly worse survival of 41.9% and 43.1%, respectively (p<0.00001, p<0.00001). Positive pathologic margins, perineural invasion, and lymph node metastasis, which were identified in 47%, 28.7%, and 15.3% of patients respectively, were associated with an adverse prognosis. Conclusions: Lower histologic grade, small tumor size, and absence of nodal disease predicted for excellent survival outcomes among patients with MEC. In contrast, high grade histology, large T3 and T4 tumors, and nodal disease on presentation all portend poor outcomes. With advancements in treatment strategies in recent years, survival of patients with IMG tumors has significantly improved and approximates the survival of patients with low grade tumors. For patients with high grade lesions, poor outcomes can be improved with multimodality treatments in selected patients.

P043 (COSM Poster #65)
PATHOLOGICAL INVOLVEMENT OF THE SUBMANDIBULAR GLAND IN NECK DISSECTIONS FOR ORAL CANCER: IS THERE A NEED TO EXCISE IT? JEAN-PIERRE JEANNON, MD FRCS, MICHAEL ELLIOTT, MD FRCS, MARK MCGUHRK, PHD FRCS, EDWARD ODELL, PHD, JAMES TYSOME, PHD FRCS, RICARD SIMO, MD FRCS, GUY’S & ST THOMAS’ NHS FOUNDATION TRUST.

Introduction: The surgical management of squamous cell carcinoma of the oral cavity often includes neck dissection in the form of selective or modified radical neck dissection. As a routine the sub-mandibular salivary gland is incorporated in the neck dissection. Resection of the submandibular gland (SMG) results in reduced saliva and decreases its important physiological functions. We investigated the incidence of macroscopic and microscopic pathological involvement of the submandibular gland (SMG) in patients with oral cancer undergoing a neck dissection. Methods: Retrospective chart review analysis of 120 patients with oral cavity carcinoma undergoing neck dissection from 1993 to 2008 at a single academic institution. Clinical and demographic details were obtained. Pathological specimens of neck dissections were examined to determine the incidence of SMG involvement in level I of the neck. The SMG was routinely evaluated macroscopically and microscopically in all cases by a pathologist. Results: 133 neck dissections were performed in 120 patients (60 left and 73 right). The average number of lymph nodes identified in level I per neck dissection was 5.8 on the left and 6.1 on the right. Pathological involvement of the SMG was found in only 2 cases (1.6% of neck dissections).

Conclusions: Pathological involvement of the SMG in oral cancer treated with a neck dissection is a rare event. While every effort should be made to remove all lymphatic tissue in level I during a neck dissection, in almost all cases, the SMG can be preserved to reduce morbidity to the patient.

P044 (COSM Poster #66)
QUALITY CARE MEASURES IN ORAL CANCER CANCER, Samuel Pate, MD, William Lydiatt, MD, Daniel Lydiatt, MD, Alan Richards, MD, Russell Smith, MD, Oleg Miliatskh, MD; University of Nebraska Medical Center.

Objectives: AHNS guidelines for quality of care in oral cavity cancer have set a new well-defined standard for the multidisciplinary treatment of patients. The objective of this study is to evaluate our success in meeting these new guidelines at our institution. Methods: A retrospective chart review of all patients diagnosed with oral cavity cancer between January 2007 and August 2009 was performed. 51/74 (69%) patients had complete records for review. Data were compiled and analyzed as per the three groups identified in the guidelines: pre-treatment, treatment and post-treatment. Results: Demographics: 51 subjects were identified with an average age – 63; M:F ratio 3:2. Pre-treatment measures: All patients had confirmation of pathologic diagnosis at our institution and TNM staging assessment prior to treatment. Smoking cessation was found in 11/18 (61%) of smokers. Treatment measures: 25/30 (83%) of patients with T=2 received XRT but all were discussed at a MDTB. All 11/11 patients with N=1 received XRT. 1/2 patients with positive margins received XRT (1 refused XRT). All 8 patients with ECS received XRT. 23/25 (92%) of patients received XRT within 1 year (2 refused), 2/2 patients with positive margins received chemotherapy. 8/8 patients with ECS received chemotherapy. 27/30 (90%) of patients recommended for XRT underwent dental evaluation. Post-treatment measures: All patients underwent regular 3 month follow up. 13/25 (52%) of patients who underwent XRT had documentation of a TSH post radiation. Conclusion: The two areas that require attention in our institution are documentation and performance of smoking cessation and TSH monitoring for hypothyroidism. We will discuss the importance of quality standards and how we have modified our clinical program to improve care.

P045 (COSM Poster #67)
EXTRACAPSULAR DISSECTION: MINIMALLY INVASIVE SURGERY APPLIED TO PAROTOID PLEOMORPHIC ADENOMA, Munehisa Fukushima, MD PhD, Mamoru Miyaguchi, MD, Higashiosaka City General Hospital.

There are two main problems after the parotid tumor operation. One is facial paralysis and another is tumor recurrence. Recently, to get over these problems we mainly performed extracapsular-dissection(ECD) for...
parotid tumor cases in these several years. This study is designed in an attempt to assess the immediate and long term results of ECD in a consecutive series of 30 patients presenting with parotid pleomorphic adenoma.

**P046 (COSM Poster #68)**

**MUCOEPIDERMOID CARCINOMA IN CHILDREN: A REVIEW OF 49 CASES.**
Jesse T Ryan, MD, Randall S Weber, MD, Michael E Kupferman, MD; Department of Otolaryngology, National Naval Medical Center, Bethesda, MD and Department of Head and Neck Surgery, Division of Surgery, The University of Texas M. D. Anderson Cancer Center, Houston, TX

**Objectives:** Epithelial salivary gland neoplasms are rare in children. Malignant tumors account for 30-50% of cases in the pediatric age group, with mucoepidermoid carcinoma being the most common histology. We reviewed our experience to determine the presentation, treatment, pathologic features, and outcomes for this rare disorder.

**Methods:** A retrospective chart review was conducted from 1953 to 2007. 49 patients were identified with a diagnosis of mucoepidermoid carcinoma and their charts were examined for examination, treatment, pathologic features, and outcomes. **Results:** 49 patients with mucoepidermoid carcinoma were treated at our institution from 1953 to 2007. Average age at presentation was 14.6 years. 88% of patients were 10 years or older at the time of initial visit. Tumors were located in major salivary glands in 57% of cases. The parotid gland was the most common subsite (49%), followed by the oral cavity (35%), submandibular gland (8%), and oropharynx (6%). 24% of patients presented with nodal disease. All patients underwent surgery; and 11 patients (22%) were treated with radiation therapy. Pathologic grade was available in 44 patients. Tumors were classified as low grade in 13 patients (30%), intermediate grade in 25 patients (57%), and high grade in 6 patients (14%). The 5-year survival was 98%, and 10% of patients developed recurrence. **Conclusion:** Mucoepidermoid carcinoma in children carries a favorable prognosis and can be successfully treated with surgery alone in most cases. Radiation therapy should be used in selective cases.

**P047 (COSM Poster #69)**

**SURGICAL MANAGEMENT OF SQUAMOUS CELL CARCINOMA OF THE SOFT PALATE AND FACTORS PREDICTIVE OF OUTCOME.**
N GopalaKrishna Iyer, MD PhD, Iain J Nixon, MD, Leslie Kim, BA, Frank Palmer, BA, Monica Whitcher, BA, Jatin P Shah, MD PhD, Snehal G Patel, MD, Ian Ganly, MD PhD; Memorial Sloan-Kettering Cancer Center.

**Background:** Squamous cell carcinoma of the soft palate is uncommon and there is limited data reporting outcomes. Despite the general trend to treat patients with oropharyngeal cancers with radiation or chemotherapy, median follow-up time for the entire cohort was 53 months (range 2-260). The 194 patients treated with surgery represent the cohort of patients in our study. Median age was 59 years (range 33-85), 112 (58%) were male and 82 (42%) female. Overall survival (OS), disease specific survival (DSS), local recurrence free survival (LRFS), regional recurrence free survival (RRFS), loco-regional recurrence free survival (LRFRS) and distant recurrence free survival (DRFS) were calculated using the Kaplan Meier method.

The following variables: overall stage, clinical T-status (cT), clinical N-status (cN), tumor morphology (endophytic vs. exophytic), depth of invasion (<2mm versus >2mm) and margin status were analysed by univariate and multivariate analysis for predictors of outcome. **Results:** The majority of patients had early stage disease: 148 (77%) had T1 or T2 tumors and 143 (74%) had a clinically negative neck. The 5-year OS, DSS and RFS rates were 48%, 68%, and 55% respectively. Eighty-eight (45%) patients developed a second primary tumor. Overall, 45% patients developed recurrence: 25% local, 23% regional and 11% distant. Univariate analysis showed that overall stage, cT status, cN status, tumor morphology and tumor thickness were significant predictors of OS and DSS, but only T-status remained significant on multivariate analysis. Patients with T2, T3 and T4 tumors were 2.2, 2.3 and 3.1 times more likely to die from disease compared to patients with T1 tumors. For local and locoregional recurrence free survival, univariate analysis showed that cT status, morphology and tumor thickness were significant predictors, while multivariate analysis showed that only cT status and tumor morphology remained significant. Patients with endophytic morphology were 2.6 times more likely to have local recurrence compared to exophytic tumors. **Conclusion:** This study examines one of the largest cohort of patients with carcinoma of the soft palate treated with primary surgery. Clinical T status and tumor morphology are important predictors of outcome in patients with this disease.

**P048 (COSM Poster #70)**

**THE IMPACT OF AGE ON SURVIVAL AND DEMOGRAPHIC TRENDS IN OROPHARYNGEAL SQUAMOUS CELL CARCINOMA.**
Kevin S. Emerick, MD, Vasu Divi, MD, Raymond Jean, BS, Sebastian Jara, BS, Jim Michaelson, PhD, Derrick T Lin, MD, James W Rocco, MD PhD, Daniel G Deschler, MD; Harvard Medical School.

**Objective:** To assess the impact of age on survival from oropharynx cancer over the past 30 years. To assess demographic trends in oropharynx cancer as well as any correlations between age, stage and survival.

**Methods:** Oropharyngeal specific data was obtained from the SEER database from 1973 to 2003. Patients were divided into an age over 60 cohort and age under 60 cohort. Demographic, survival and staging were assessed by decade and compared between age groups as well as to a control group of oral cavity tumors. Statistical analysis was performed on all parameters. **Results:** Overall disease specific survival increased from 69% to 83% during this time period for oropharyngeal cancer. 5 year survival improved in the under 60 group from 71.5% to 87.5%, and it improved in over 60 group from 68% to 77.5%. When comparing the groups within each decade of analysis, patients under 60 did significantly better in all 3 decades. This survival difference between age groups increased significantly over three decades from 2.98% to 9.93% (p<0.0001). Both groups have equivalent mean primary tumors size (3.10 cm vs. 2.99cm). There was a significant increase in higher N-stage cases in the under 60 group compared with the over 60 group (p < 0.0001). Rates of N2 disease and N3 disease for the under 60 group were 45.79% and 6.81% respectively. In the over 60 group, the rate of N2 disease was 36.14% and the rate of N3 disease was 4.16%. In the limited TNM data available, 2-year survival in the under 60 group was 92.52% and in the over 60 group it was 84.98% (p<0.0001). Demographic analysis showed an increase from 45% to 51% in the proportion of patients under 60 during these three decades. There was also a significant increase in the number and proportion of males in the under 60 cohort in the most recent decade, especially in the under 60 group. The proportion of males increased in the over 60 group from 68.7% to 71.4%, and in the under 60 group from 66.9% to 82.2%. The control group did not demonstrate an increase in the number of patients under 60 and there was not an increase in the proportion of males. **Conclusion:** Overall disease specific survival has increased over the past 3 decades for oropharyngeal cancer. This change in survival is most dramatic in a group of patients under 60 years of age. Even though patients under 60 demonstrated better survival than their over 60 counterparts they have a much higher incidence of N2 and N3 nodal disease. Several important demographic shifts were also observed. There is an increasing overall number and proportion of patients under 60 with oropharynx cancer. There is also an increasing number and proportion of men with oropharynx cancer especially in the under 60 group. The SEER database does not provide biological data for these tumors, however, in light of the growing literature regarding HPV-related oropharyngeal cancer, many of these findings may be attributable to this increasing incidence of HPV-related oropharyngeal cancer.

**P049 (COSM Poster #71)**

**CLINICAL AND FUNCTIONAL OUTCOME OF SPINAL ACCESSORY NERVE IN NECK DISSECTIONS.**
Mario Busi, MD, Daniela Sarandria, MD, Leone Giordano, MD, Ubaldo Del Carro, MD, Roberto Teggi, MD, Francesca Lira Luce, MD; IRCCS San Raffaele, Milan, Italy.

**Objective:** To assess the clinical and functional outcome of patients who underwent different types of neck dissection, with special regards to the spinal accessory nerve, to the trapezius muscle and to shoulder function.
Materials and Methods: we evaluated 23 cases of neck dissection in 13 patients affected by laryngeal cancer. They were all clinically ND. Group 1 (6 cases) were treated with a suprascapular neck dissection (IAA-III-IV); group 2 (17 cases) were treated with a selective neck dissection (levels IIA-IIb-III-IV). Motor unit action potential (CMAP) and the electrical activity of the superior part of the trapezius muscle were evaluated by electromyography in each case at different time points: preoperatively (T0) and after surgery at week 1.3 (T1 and T3) and after one year (T3). We also asked our patients to perform the “Neck Dissection Quality Of Life Questionnaire” and the “arm Abduction Test”. These tests were performed about 1 month after surgery. Results: In all the cases at the end of surgery it was possible to assess the integrity of the spinal accessory nerve. There was no anatomical evidence of nerve damage. At T0 CMAP evaluation and electromyography were normal in all the cases. Amplitude was 10.9 mV on average in group 1 and 11.8 mV in group 2. No spontaneous activity was present in all the cases. At T1 CMAP amplitude was 6.5 mV in group 1 and 2.7 mV in group 2. No spontaneous activity was observable in the trapezius muscle of group 1 cases, while it was present in 8 cases of the group 2. Inference was reached in 3 cases of group 1, transacted because was observable in two cases. We found reduction of the voluntary contraction in group 2: complete absence in 9 cases, single oscillation in 3 cases, poor transition in 1 case and normal in 4 cases. At T2 CMAP amplitude was 6.43 mV in group 1 and 3.12 mV in group 2. Spontaneous activity was relatable in 2 cases of group 1 and in all the cases of group 2. No voluntary contraction was present in group 2. At T3 CMAP amplitude was 9.6 mV in group 1 and 9.12 mV in group 2. We found the reduction of the spontaneous activity and an increased voluntary activity in both the 2 groups. The arm abduction test showed greater impairment in abduction in group 2; no differences between the two groups were presented at the clinical evaluation with questionnaire.

CONCLUSIONS: Our data confirm that surgical manipulation of the nerve may determine a severe impairment of nerve conduction when sublevel IIB is involved in the dissection. With negative frozen section in the sublevel IIA, the Authors suggest to avoid, whenever possible, the dissection of the sublevel IIB.

P050 (COSM Poster #72)
NO MAN’S LAND IN HEAD & NECK SURGERY: THE STROMAL TISSUE BETWEEN THE PRIMARY TUMOR AND THE CERVICAL LYMPH NODES (THE T-N TRACT) IN ADVANCED TONGUE TUMORS. ANATOMICAL AND ONCOLOGICAL CONSIDERATIONS ON A TERRITORY AT RISK FOR METASTATIC DISEASE. Luca Calabrese, MD, Roberto Bruschini, MD, Angelo Ostuni, MD DDS, Valeria Navach, MD PhD, Luigi Santoro, MD, Fausto Chiesa, MD, Roberto Bruschini, MD, Angelo Ostuni, MD DDS, Valeria Navach, MD PhD, Luigi Santoro, MD. Department of Otolaryngology, University of Milan, Italy.

Objective: To assess the anatomical and oncological considerations regarding the T-N tract and its involvement in advanced stage tongue tumors.

Methods: We performed a retrospective analysis of 79 patients treated with major ablative surgery (CTS) and neck dissection. We conducted a pilot study on a sample of 150 consecutive patients with previously untreated primary advanced tongue tumours. After demotion with in-continuity lateral neck dissection the specimen is removed en-block and the surgeon prepares it for the pathologist on the back table. It is dissected in its three component portions: the primary, the T-N tract and the contents of the neck. As with the rest of the specimen, the T-N tract is meticulously analyzed microscopically for presence or absence of metastatic disease. In 11 patients we found evidence of disease in the T-N tract and its involvement correlated negatively with local and loco-regional relapse and overall survival. We present a discussion on the challenges surgical oncologists face in the management of the neck and the impact of the T-N tract and an anatomical approach to the potential pathways of disease progression.

P051 (COSM Poster #73)
FACTORS ASSOCIATED WITH PHARYNGOESOPHAGEAL STRICATURE IN PATIENTS TREATED WITH A UNIFORM CHEMORADIATION PROTOCOL FOR OROPHARYNGEAL SQUAMOUS CELL CARCINOMA. Simon R Best, MD, Patrick K Ha, MD, Eva Zinreich, MD, Marshall Levine, MD, Melissa Walker, MS, CCSCP; Jaclyn Trachta, MS, CCSCP; Karen Ulmer, RN, John Saunders, MD, Peter Murakami, Richard Thompson, Joseph A Calliano, MD, Barbara P Messing, MS CCSCP; Department of Otolaryngology, Johns Hopkins Hospital, Baltimore, MD, USA; Milton J. Dance Head and Neck Center, Greater Baltimore Medical Center, Baltimore, MD, USA; Johns Hopkins University, Biostatistics Consulting Center, Baltimore, MD, USA.

Purpose: Pharyngoesophageal stricture is a known complication of organ-sparing treatment protocols for head and neck cancer. However, its risk factors are incompletely understood and the pathophysiology of stricture formation is not clearly delineated. Study Design: Retrospective analysis of all patients undergoing a uniform cisplatin-based chemotherapy protocol and concurrent radiation for oropharyngeal squamous cell carcinoma was performed. After excluding patients with less than one year follow-up, 67 patients were available for analysis. Stricture formation was assessed on serial barium swallow studies and by the need for dilation. Results: A stricture was present in 13 (19%) patients. The presence of stricture was associated with tumor location (tonsill vs. base of tongue, p = 0.03), neck dissection following chemoradiation (p = 0.03), and the duration of severe radiation-induced mucositis (weeks with mucositis > 2, National Cancer Institute Common Toxicity Criteria; p = <0.001) using uni-variate analysis. Age, sex, race, T-N tract stage, AJCC stage, HPV status, smoking status, radiation dose to primary tumor or neck, maximum severity of mucositis, amifostine use, and disease status were not associated with stricture. Multi-variate analysis controlling for tumor location, duration of mucositis, age, sex, and smoking history revealed that tumor location was no longer associated with stricture formation (p = 0.76) while duration of radiation-induced mucositis remained highly significant (p < 0.01). Each additional week of radiation-induced mucositis was associated with an additional 34% increase in the cumulative risk of stricture formation. Conclusion: In a homogenously-treated patient population with oropharyngeal squamous cell carcinoma the duration of radiation-induced mucositis is an independent risk factor for stricture formation. This suggests a pathophysiologic mechanism of stricture formation that can identify patients at risk and may help guide therapeutic interventions in the future.

P052 (COSM Poster #74)
ADENOSQUAMOUS CARCINOMA OF THE HEAD AND NECK: A CLINICOPATHOLOGIC AND MOLECULAR ANALYSIS OF 20 CASES. Steven C Lee, MD PhD, Umamaheswar Duvvuri, MD PhD, Jason Kass, MD PhD, Sanja Dacic, MD PhD, Kathleen Cieply, MS, Raja R Seethala, MD; Departments of Otolaryngology and Pathology, University of Pittsburgh.

Objective: Adenosquamous carcinoma is a rare malignancy which is characterized by the presence of two distinct histological components: an adenocarcinoma component and a squamous cell carcinoma component. In the past, it has been a uniformly aggressive malignancy.
often confused with high grade mucoepidermoid carcinoma and only recently have histologic criteria for delineation been formalized. In this report, we describe the experience at the University of Pittsburgh. **Study Design:** Retrospective cohort study. **Methods:** After obtaining approval from the institutional review board, clinical and demographic data were retrieved from the University of Pittsburgh Tumor Registry (1973-2004) on 20 previously unreported cases of adenosquamous carcinoma. These were re-examined using current histologic criteria to confirm diagnosis. Breakpoint FISH using probes targeting the MAML2 gene region to detect the t(11;19)(q21;p13) or MECT1-MAML2 translocation was also performed to confirm delineation from high grade mucoepidermoid carcinoma. **Results:** This is the largest series of this rare tumor to date. There was a 3:1 male to female preponderance with a peak incidence in the sixth decade of life. Larynx was the most common site of disease accounting for almost 50% of the cases with oral cavity and oropharynx accounting for another 30%. Nine of the tumors were T1 or T2. Nodal metastases were found in 25% of cases. There were 3 deaths and 5 recurrences with a mean followup of 5 years. Five year disease specific survival was 83%. All cases were negative for the MECT1-MAML2 translocation. **Conclusions:** Although previous studies have reported a dismal prognosis for adenosquamous carcinoma, our cohort suggests that in lower stage disease without nodal metastasis, prognosis is not uniformly poor. The absence of the MECT1-MAML2 translocation confirms biologic distinction from mucoepidermoid carcinomas.

**P053 (COSM Poster #75)**
MINIMALLY INVASIVE TRANSORAL SURGERY, Ian M Smith, MD, Jeremy D Richmon, MD, Ray Blanco, MD, Joseph A Califano, MD, Johns Hopkins Medical Institutes.
Transoral Laser Microsurgery (TLM), Endoscopic Laser Assisted Laryngeal Surgery and Transoral Robotic Surgery (TORS) have come into favor for the treatment of upper aerodigestive head and neck squamous cancers. These approaches have been employed in an effort to mitigate or eliminate morbidity associated with traditional, open surgical approaches used alone or in combination with chemotherapy and radiation therapy. We hypothesized that these diverse techniques employ highly similar basic surgical principles, and that the success of these techniques depends primarily on two factors: 1) an axial approach to resection of tissue that avoids proximal interruption of sensory nerves and maintains a more physiologic sensory innervation, and 2) an anatomic reconstruction that recapitulates the physiologic, activated state of phonation or deglutition. We hypothesize that the relative success and failure of a variety of transoral surgical techniques in diverse anatomic sites can be predicted on the basis of these principles, and provide supporting data from anatomic studies and functional studies on these surgical approaches that validate these concepts. Based on these data, we suggest that the rapid proliferation of novel technology defined approaches may more precisely be understood in functional anatomic terms, and should be grouped together as a unified entity, e.g. Minimally Invasive Transoral Surgery (MITS).

**P054 (COSM Poster #76)**
REFUX IN HEAD AND NECK CANCER PATIENTS AFTER RADIATION THERAPY, Allis H Cho, MD, Ellen A Lewis, NP, Cherie-Ann O Nathan, MD, LSUHSC-Shreveport.
**Objectives:** To determine if reflux is increased in laryngo-hypopharyngeal cancer patients who have had radiation (XRT) ± chemotherapy compared to non-radiated patients. **Design:** Prospective study. **Setting:** State University Hospital. **Patients:** Twelve patients with advanced head and neck cancer were evaluated for reflux events using a nasopharyngeal 24 hour pH probe in the last year. Three patients had XRT ± chemotherapy as primary treatment and nine patients were newly diagnosed and treatment was not yet initiated before the pH probe reflux study was performed. There were no patients on reflux medications at the time of the pH probe study except one patient who still had considerable reflux despite the medication. **Main Outcome Measures:** Ryan scores measuring positive reflux events. **Results:** The majority of patients had laryngeal cancer (83%). All patients who were treated with XRT ± chemotherapy primarily had significant reflux as indicated by considerably higher Ryan scores (mean of 547.42 ± 303.59 upright) compared to those who did not have XRT ± chemotherapy (mean of 37.42 ± 63.70 upright) (p=0.0004). Two of the three patients treated primarily with XRT ± chemotherapy had reflux in upright and supine positions, while one patient had reflux only in the upright position. Four of the nine non-radiated patients had reflux only in the upright position, and no one had reflux in the supine position. The mean supine Ryan scores of patients treated with XRT ± chemotherapy was 27.88 ± 35.41 compared to 2.88 ± 1.23 in nonradiated patients (p=0.0398). **Conclusions:** This preliminary study demonstrated that XRT ± chemotherapy caused significant increase in Ryan reflux score compared to non-radiated patients. Given that XRT causes xerostomia and the absence of the neutralizing effect of bicarbonate in the saliva, we believe that XRT causes a significant increase in LPR. Although this is a pilot study and the numbers are still small, the results are striking and there is no objective data in literature linking XRT to reflux at this time.

**P055 (COSM Poster #77)**
HEAD AND NECK SQUAMOUS CELL CARCINOMA IN THE SETTING OF ORGAN TRANSPLANTATION, Rahul Seth, MD, Eric D Lamarre, MD, Paul Kwak, MD, Joseph Scharpf, MD, Robert R Lorenz, MD, Brian B Burkey, MD, Cleveland Clinic.
**Background:** Solid organ transplantation has become a frequently performed procedure. The immunosuppression required for transplanted organ survival increases rates of malignancy in this population, particularly of cutaneous malignancies. Recently, the commonly used immunosuppressant sirolimus, an mTOR kinase receptor inhibitor, has demonstrated potential anti-neoplastic efficacy. We examine our experience with head and neck squamous cell carcinoma (SCC) among solid organ transplant recipients and a preliminary review of the effectiveness of sirolimus in this population. **Methods:** Retrospective review of patients diagnosed with squamous cell carcinoma of the head and neck with a history of previous solid organ transplantation at the Cleveland Clinic between 1999 and 2009. Patients with both cutaneous and upper aerodigestive tract malignancies were included. Cutaneous malignancies were included if they had loco-regional metastasis to the neck or parotid gland. We reviewed the medical records of 20 patients. **Results:** Squamous cell carcinomas of cutaneous origin occurred in 9 of the 20 patients, while upper aerodigestive tract malignancies comprised the remainder. Nineteen of the 20 patients (95%) were diagnosed with squamous cell carcinoma of cutaneous origin. The overall survival of this patient population was 40% at mean follow-up time of 30.1 months. Two year disease-specific survival was 58.8%. However, overall disease-specific mortality was 50.0%, and mean time until death was 16.3 months. **Conclusions:** Multimodality therapy was used in most patients. Fourteen patients (70%) underwent surgical resection, and 11 (9%) were treated with definitive chemoradiation therapy. Forty percent of patients had loco-regional recurrence. Immunosuppressant medications and dosages were able to be reduced in 11 patients. Nine patients were switched to sirolimus therapy after SCC diagnosis. Loco-regional recurrence among patients treated with sirolimus was 33.3%, and 50.0% among those not treated with sirolimus (p=0.65). **Conclusions:** Immunosuppressed patients represent a difficult population of patients to treat given their comorbidities, multi-disciplinary care required, and aggressive malignancies. In our examined group of patients, mortality rates were high despite aggressive treatment. To enhance tumor control, immunosuppressive medications were reduced when possible. Due to its dual immunosuppressive and potential anti-neoplastic properties, sirolimus may play a role in the management of transplant recipient advanced head and neck malignancy.

**P056 (COSM Poster #78)**
SENTINEL LYMPH NODE MAPPING FOR T1/T2 ORAL SQUAMOUS CELL CARCINOMA: DOES IT HAVE THE SAME EFFICACY AS FOR CUTANEOUS MELANOMA? Jose H. Steck, MD, Eroln M Ballejo, MD, Marina Linek, MD, Erivelto M Volpi, MD, Antonio L Souza, MD, Mario Gatti Hospital - Campinas - Brazil, Onccape Clinic, Cirucape.
**Background:** Neck metastases are one of the most valuable prognostic factors both for patients with Oral Squamous Cell Carcinoma and Head and Neck Cutaneous Melanoma. The Sentinel Lymph Node Mapping (SLNM) is a useful technique to stage lymphatic basess in solid tumors and had become standard of care for staging Cutaneous Melanoma. Some controversies exist for the use of SLNM for oral cancer and it is
not considered standard of care for this pathology.

**Objective:** To study the SLNM in oral cancer as a Diagnostically Staging procedure and compare its accuracy with SLNM for Head and Neck Cutaneous Melanoma.

**Patients and Methods:** We analyzed 104 consecutive SLNM from the Head and Neck region, 32 with initial Oral Cancer staged T1 or T2 N0 (Group A), and 72 Cutaneous Melanoma from the Head and Neck Region staged T1b or more N0 (Group B), all performed by the same Surgical Team. All patients underwent preoperative Lymphoscintigraphy, intraoperative use of blue dye and gamma probe, and postoperative pathological serial sections with immunohistochemical study for the Sentinel Lymph Node (SLN). For Oral Cancer the first 18 patients were also submitted to Supraomohyoid Neck Dissection to validate the SLNM technique. The minimal follow-up was 14 months. To compare the 2 Staging tests we analyzed the Sensitivity, Specificity, Positive Predictive Value (PPV), Negative Predictive Value (NPV) and overall Accuracy from both Groups. **Results:** The mean age of the Group A was 62 (range 28 to 80), with 25 men (77%). For Group B it was 58 (range 13 to 81), with 37 men (51%). At least 1 SLN was located in 31/32 patients in the Group A (96.8%), and 70/72 in Group B (97.2%). We had 1 False Negative in 31 patients (Group A), with the remaining, 100% Specificity, a PPV of 100% and NPV of 96.1%. The overall Accuracy was 96.7%. For the Group B there were 2 False Negatives, 88% Sensitivity, 100% Specificity, PPV of 100% and NPV of 96.4%. The Overall Accuracy for Group B was 97.1%. The Mortality rate of Group A was 6% (2 patients with positive SLN). **Conclusion:** The Accuracy of SLNM to adequately stage T1/T2 Oral Squamous Cell Carcinoma is comparable to SLNM for Head and Neck Cutaneous Melanoma.

**P057 (COSM Poster #79)**

**INDUCTION CHEMOTHERAPY FOR ORAL CAVITY CANCERS.**

T Loree, M Chadha, V Jayaprakash, K Thankappan, S McCloskey, M Sullivan, E Hatton, N Riguai; Roswell Park Cancer institute.

**Objective:** There is a paucity of reports on the role of induction chemotherapy (IC) in the treatment of advanced oral squamous cell carcinoma (OSCC). We present our experience utilizing IC in the management of stage III/IV OSCC.

**Patients & Methods:** Twenty patients (10 floor of the mouth, 6 oral tongue, 3 buccal mucosa, 1 hard palate) with stage III/IV OSCCs were included in the study. The median age of the cohort was 61 years, 50% were females and 50% current smokers. Six patients had stage III disease and 14 had stage IV. Patients were treated with 2 to 4 cycles of 1 week or 3 week induction regimens [9 patients with cisplatin+taxotere (CT), 5 with CT+5-fluorouracil (5FU), 3 with CT+Erbitux(E), 3 patients with CT+xeloda and 1 with CE+5FU]. IC response was evaluated utilizing clinical exam as well as imaging. Patients with >80% response were classified as near complete response (NCR), whereas patients with <80% response were classified as partial response (PR). **Results:** Nine patients (45%) had a complete response (CR) or NCR (3 CR and 6 NCR). Eight patients (40%) had PR and the remaining 3 (15%) showed no response (NR) and disease progression. All three CR patients had definitive surgery only and were confirmed to have a pathologic CR and remain disease free (mean follow-up:22.7 months). Of the 6 NCR patients, 3 were treated with surgery and adjuvant concurrent chemo-radiotherapy (CRT) and all 3 patients remain disease free (mean follow-up:11 months). One NCR patient received CRT alone and remained disease free at 31 months. Two NCR patients were treated with surgery alone, one developed a local recurrence at 37 months after the definitive treatment and the other patient was lost to follow-up 3 months post-op. Among the 8 PR patients, one was treated with CRT alone and one patient with surgery + CRT, and they remain disease free at 4 and 26 month follow-up, respectively. Two PR patients were treated with surgery alone and remain disease free at 33 and 41 month follow-up. The other 2 PR patients refused recommended surgery+CRT, one had surgery (developed local recurrence) and the other had chemo alone (metastasis to the liver). Among the 3 NR patients, one received surgery +CRT and developed a regional recurrence in 3 months and another received CRT and developed distant metastasis at 2 months. Both patients died of disease. The other NR patient received surgery alone as definitive treatment and remains disease free at 10 month follow-up. One IC patient died of MRSA sepsis and multiple organ failure. **Conclusion:** Overall, 85% of our patients responded to IC. All 3 CR patients were confirmed to have a pathologic CR and are disease free. Eighty-eight percent of the CR/NCR patients are disease free for an average of 18.7 months after definitive therapy. We found IC to be an effective neo-adjuvant therapy for this cohort of stage III/IV OSCC patients.

**P058 (COSM Poster #80)**

**CHEMORADIOThERAPY FOR PATIENTS WITH LARGE VOLUME T4 LARYNGEAL CANCER.**

Kerstin M Stenson, MD, Rangesh Kunnakavaka, MPH, Joseph Salama, MD, Ezra E Cohen, MD, Louis D Portugal, MD, Victoria Villafior, MD, Ellen MacCracken, SPSS; University of Chicago.

Many patients with advanced head and neck cancer have achieved profound benefit from function-preserving multimodality treatments. Patients with T4 laryngeal cancers, including those classified with large volume (cartilage or tongue-base invasion) are often excluded from organ-preservation trials due to expectations of inferior outcome in terms of survival and function. The purpose of this study was to analyze efficacy, survival and swallowing function in patients with large volume T4 laryngeal cancers.

**Study Type:** Retrospective analysis of prospectively collected data. **M&M:** All T4 laryngeal cancer patients who were enrolled in University of Chicago concomitant chemoradiotherapy protocols from 1994 to present were reviewed. This included analysis of 13 clinical trials and 996 patients. This study is comprised of 80 newly diagnosed T4 laryngeal cancer patients. CT scans were reviewed to confirm large volume status. Swallowing function was evaluated by Oropharyngeal Motility study (OPM). **Results:** Follow-up ranged from 0.18 to 15.6 years. The average age is 58 (range 33-84) and the major laryngeal subsite was supraglottis (64 of 80 patients). Three and five year overall survival rates were 60.0% and 48.7%. Disease-specific three and five year survivals were 80.1% and 71.3%. Progression-free survival rates were 52.6% and 47.6%. Eight patients (10%) underwent salvage laryngectomy, all of whom succumbed to metastatic disease. Patients with available OPM data showed at least complete dysphagia with some aspiration. Most were able to avoid g-tube and pulmonary complications with close monitoring. Further functional analyses are ongoing. **Conclusions:** Chemoradiation for patients with T4 laryngeal cancer appears to be an effective and reasonable option, particularly in light of the satisfactory survival and swallowing preservation.

**P059 (COSM Poster #81)**

**ROLE OF THYROIDECTOMY IN THE SURGICAL MANGEMENT OF ADVANCED LARYNGEAL AND PHARYNGOLARYNGEAL CARCINOMA.**

JEAN-PIERRE JEANNON, MD FRCS, MICHAEL ELLIOT, MD FRCS, RICHARD SIMCO, MD FRCS, ATA SIDIQI, MD FRCS, EDWARD ODELL, PhD, STEVE CONNOR, MD FRCS, JAMES TYSOME, PhD FRCS; GUY’S & ST THOMAS’ NHS FOUNDATION TRUST.

**Introduction:** Total thyroidectomy (TTH) or hemithyroidectomy (HTH) in conjunction with a total laryngectomy (TL) or pharyngolaryngectomy (PL) for laryngeal cancer often renders the patient hypothyroid and commits them to life-long thyroid hormone replacement. Our aim was to determine with incidence of thyroid gland (TG) invasion in patients undergoing TL or TPL with TTHy or HThy for primary or recurrent laryngeal or hypopharyngeal cancer and to assess predicative factors.

**Methods:** Retrospective analysis of 35 patients from 2004 - 2008 at Guy’s Hospital, London. Specimens were examined to determine the incidence of TG invasion and relevant predicative factors such as histological grade and subtotal extension. Preoperative imaging was reviewed to assess for radiological evidence of TG invasion. **Results:** TL and TThy was performed in 19 patients, TL and HThy was performed in 3 patients and PL and TThy was performed in 13 patients. Surgery was performed for primary and recurrent cancer in 28 and 8 patients respectively. Histological evidence of invasion of the TG was found in 13 patients (37.1%). No significant relationship was found between TG invasion and patient’s sex, subsite of primary carcinoma, stage of primary disease at surgery, degree of differentiation and the presence of subtotal extension. A trend was found between the presence of TG invasion and surgery for recurrent disease. Definite evidence of radiological invasion of the TG was seen in only one patient.

**Conclusions:** Invasion of the TG in patients undergoing a TL or TPL is a rare event and limits the need for a TThy in most cases.
**P060 (COSM Poster #82)**

**INTENSITY-MODULATED RADIATION THERAPY (IMRT) IN THE TREATMENT OF OROPHARYNGEAL CARCINOMA: CLINICAL OUTCOMES AND RELATION OF PAROTID GLAND VOLUME WITH XEROSTOMIA.**

Iain J Nixon, Mr, Frank L Palmer, Mr, Ian Ganly, Dr, Snehal J Good

Locoregional control rates and use of IMRT resulted in acceptable RT duration by Wilcoxon test. Our results show very good locoregional control rates and use of IMRT for squamous cell cancers of the oropharynx. Methods: Between January 2001 and December 2006, 49 patients with oropharyngeal cancer received IMRT with curative intent at Fox Chase Cancer Center. Among these, 48 (98%) were squamous cell carcinoma and 1 (2%) adenocarcinoma. The median age was 58 years (range: 41-85), 82% were smokers, and 90% were stage III or IV. 86% received definitive RT (63% concurrent chemoradiotherapy and majorly received cisplatin, 22% RT alone), and 8% were re-irradiation cases. Volume (Vmean) of the PG (mean, ipsilateral and contralateral with respect to the primary tumor) was analyzed for relationship to Xerostomia by using Wilcoxon test in 26 patients. Pearson’s correlation coefficient was used to see relation between the percentage weight loss with parotid gland volume. The mean dose constraint to parotid gland was 28 Gy. RTOG acute toxicity scoring was used. In grade 2 patients, Patient tumor was main treatment related factors, including age, T stage, N stage, location of primary tumor, addition of chemotherapy, and RT doses were analyzed for patterns of failure and incidence of xerostomia. Results: The median follow up was 16 months (range: 1 - 84). The 2-year local, locoregional, distant metastases free survival and overall survival rates were 90%, 90%, 91% and 71% respectively with a median time to failure of 15 months. V mean of PG’s were 19 cc, 29 cc and mean RT doses were 50 Gy, 25 Gy respectively on the ipsilateral and contralateral sides. Median percent weight loss was 10% at 7th week of treatment. Grade 1-2 acute xerostomia was seen in 94% and Grade 3 in 4%. There was no statistically significant correlation between percent weight loss or xerostomia and either ipsilateral or contralateral PG volumes (p = 0.3). There was no difference in incidence of xerostomia in relation to age, gender, addition of chemotherapy, location of tumor, RT dose, RT duration by Wilcoxon test. Conclusions: Our results show very good locoregional control rates and use of IMRT resulted in acceptable xerostomia rates.

---

**P062 (COSM Poster #84)**

**ENDOSCOPIC SUBMUCOSAL DISSECTION FOR EARLY LARYNGO-PHARYNGEAL CANCER - A NEW TREATMENT STRATEGY FOR THE HEAD & NECK CANCER.**

Ichiro Tateya, MD, Manabu Muto, MD, Shuko Morita, MD, Ryo Asato, MD, Tomoko Kanda, MD, Seiji Ishikawa, MD, Shinya Keda, MD, Morimasa Kitamura, MD, Shigeru Hirano, MD, Jiuchi Ito, MD, Kyoto University, Japan.

Background and Purpose: Endolaryngeal-phonaryngeal cancer is often advanced when detected and has relatively poor prognosis. Surgical operation for advanced cases impairs swallowing and/or vocal function and chemoradiotherapy sometimes causes severe adverse effects involving severe swallowing disorders. Early detection of the tumor is important because it not only improves survival rate but also minimizes functional loss of swallowing and voice. We have previously reported that narrow band imaging (NBI) combined with magnifying endoscopy is useful in detecting early superficial laryngo-pharyngeal cancers, which are difficult to detect with a standard endoscopy. For such cases, we are applying endoscopic submucosal dissection technique which is increasingly used for early esophageal cancer. In this study, we investigated the usefulness of endoscopic submucosal dissection for early laryngo-pharyngeal cancer. Operation Procedure: Under general anesthesia, specially designed curved laryngoscope was inserted to allow a working space in the pharyngeal lumen and magnifying endoscopy (SIF TYPE H2602; Olympus, Tokyo) was inserted transorally to visualize the field. The extent of the lesion was determined by NBI and iodine staining and the margins of the lesion are marked with coagulation. Mixed solution of glycerol, epinephrine, and saline was injected into the submucosal space under the lesion, creating a safety space. The space lifts the lesion to facilitate its removal and minimizes damage to the deep layers of the laryngo-pharyngeal wall. A circumferential incision into the submucosa was performed around the lesion and the lesion was dissected from the laryngo-pharyngeal wall. Cutting and dissection procedure was performed either with specialized endoscopic electric knife or with orally inserted curved electric knife. Fasting period was usually 1-2 days after operation. Results: Since September 2007, 47 cancer lesions were removed from 28 patients (twenty seven men and one woman, median age 67 y.o.). Of the 28 patients, 8 patients (29%) had synchronous multiple cancers at laryngo-pharyngeal sites. Eight patients (29%) had a history of head and neck cancer, and twenty patients (71%) had a history of esophageal cancer. Tumor origin was thirty eight lesions in the hypopharynx, 8 lesions in the oropharynx, and one lesion in the larynx, respectively. In the hypopharynx, 74% of the lesions were located in the piriform sinus. Tracheostomy was performed in one case which had four synchronous multiple lesions in the hypopharynx. Regarding adverse effects, post operative bleeding occurred in one case which needed emergency tracheostomy. With a median follow up period of 15 months, metachronous multiple laryngo-pharyngeal cancer occurred in 4 cases (14%) and recurrence occurred in one case (4%). All the metachronous cancer cases and the recurrent case were controlled with additional endoscopic submucosal dissection. The cause-specific survival rates at two years were 100%. All the patients could retain their pharynx and did not need neck dissection. Conclusions: Endoscopic submucosal dissection for early laryngo-pharyngeal cancer allows excellent survival and the preservation of swallowing and voice functions. Early detection of superficial laryngo-pharyngeal cancer with narrow band imaging technology and the treatment with endoscopic submucosal dissection can be a new treatment strategy for the head and neck cancer.
P063 (COSM Poster #85)
ULTRASOUND-GUIDED PHOTODYNAMIC THERAPY FOR DEEP SEATED PATHOLOGIES: A PROSPECTIVE STUDY. Waseem Jerjes, MSc PhD MBBS BDS, Colin Liew, FDS FRCS, Tahwinder Upile, MS FRCS, Hamdoon Zaid, MSc BDS, Mosse Charles, PhD, Morley Simon, MRCP FRCR, Konstantinos Karavidas, MD DMD, Hopper Colin, MD MBBS BDS; University College London Hospitals.

Background: Interstitial photodynamic therapy (PDT) remains an attractive remedial option in minimally invasive surgery. Our aim in this prospective study was to evaluate the outcome following ultrasound-guided iPDT (US-iPDT) of deep seated pathologies. Patients’ reports on quality of life with clinical and radiological evaluation were the main end point parameters used to assess the outcome. Methods: Sixty-eight patients were referred to the UCLH Head and Neck Centre, London for treatment of various deep pathologies involving the head and neck region, upper and lower limbs. All patients were discussed at the UCLH Head and Neck MDT. It was decided that the only available option was to offer interstitial photodynamic therapy under general anaesthesia, using 0.15mg/kg mTHPC (Foscan) as the photosensitising agent. Following treatment, patients were followed-up for a mean time of 7 months. Results: All patients who presented with visual problems reported improvement after treatment. Also, 14/17 reported improvement of breathing. Improvement of swallowing was reported by 25/30 patients; while speech improvement was evident in 16/22 patients. 33/44 reported reduction in the swallowing defect caused by their pathology. All patients reported improved limb function. Clinical assessment showed that half of the patients had “good response” to the treatment and a third reported “moderate response” with two patients being fully cured. Radiological assessment comparing imaging 6-week post-PDT to the baseline showed stable pathology with no change in size in 13 patients, minimal response in 18 patients, moderate response in 23 patients and significant response in 11 patients. Conclusion: The growing body of evidence regarding the efficacy of interstitial photodynamic therapy suggests that it will have a leading role in minimally invasive surgery and interventional oncology, especially with the development of image-guided iPDT.

P064 (COSM Poster #86)
REFINEMENT OF THE RADIAL FOREARM DONOR SITE USING ACELULAR DERMAL MATRIX. Carlos P Medina, MD, Sameer Patel, MD, John Ridge, MD PhD, Neal S Topham, MD FACS, Neal S Topham, MD FACS; Fox Chase Cancer Center, Temple University Hospital.

Introduction: Squamous cell carcinoma of the tongue is the most common intraoral malignancy. The majority of the cancers are located on the anterior two-thirds of the tongue. Therefore this cancer can often be treated with a hemiglossectomy. Free-tissue transfer is often required to reconstruct the defect on the floor of the mouth. The radial forearm free flap has been the most commonly used flap to drape the floor of the mouth. The simplest way to close the donor site is to use a split thickness skin graft. Skin grafting requires the creation of an additional wound, as the donor site for the skin. Problems with graft take can hamper the postoperative progress or delay discharge from the hospital. Moreover, skin graft closure of the donor site leaves a visible contour defect in the forearm of the patient that underwent this procedure. We present a novel technique for tongue reconstruction that uses acellular cadaveric dermis to pre-laminate the radial forearm free flap. We believe that our method can help reduce the donor site morbidity by achieving direct closure of the soft tissue defect. Methods: Nineteen consecutive patients requiring subtotal glossectomy for tongue malignancy underwent a two stage procedure to reconstruct the tongue using a pre-laminated radial forearm free flap between April 2006 and September 2009. A functional assessment of swallowing and speech of this group of patients was performed. The results were compared to those of eleven other patients with the same diagnosis who underwent similar resections but had their reconstruction performed with a standard radial forearm free flap. Results: All patients that underwent tongue reconstruction using the acellular cadaveric dermis achieved achieved comparable results as the control group in terms of range of motion, pain strength, speech, swallowing, and appearance of the donor site. All 19 patients in the experimental group did not require split thickness skin grafting for closure of the forearm donor site. Conclusions: The use of acellular cadaveric dermis to pre-laminate the radial forearm free flap for tongue reconstruction demonstrated to be a safe, reliable, versatile and convenient method for intraoral reconstruction. All of the patients experienced an improved the appearance of the forearm donor site by eliminating the need for skin grafting. The possibility of permanently disturbing hand function is reduced while it also eliminates the potential transfer of hair to the mouth of the patient. Our technique achieved excellent functional outcomes while reducing the morbidity associated with procedure.

P065 (COSM Poster #87)
PRIMARY RADIATION, SECONDARY SURGERY IN PATIENTS WITH FACIAL NERVES AT RISK FROM CARCINOMAS OF THE PAROTID GLAND. Nathan Hales, MD, Jesus E Medina, MD, Chance Matthiesen, MD, Carl Bogardus Jr., MD, J. Spencer Thompson, MD, Greg A Krempl, MD; The University of Oklahoma Health Science Center.

Introduction: Carcinoma of the parotid gland can appear clinically and radiographically in close proximity to the facial nerve placing it at risk if primary surgery is undertaken. Post-operative radiation is utilized in most of these cases. Treatment with radiation first, “a reversed order of treatment approach,” has not been widely utilized but has potential to decrease the size of tumors and thereby decrease the risk of facial nerve injury or sacrifice with surgery. Methods: At the University of Oklahoma this reversed approach has been utilized when patients presented with documented malignancies and initial evaluation revealed tumors that were either rapidly growing, fixed to the skull base or otherwise locally advanced and carried a high risk of sacrifice of a functioning facial nerve. An analysis of this practice was performed to evaluate outcomes. Results: Eighteen patients with nineteen tumors were reviewed, with ages ranging from 20 – 89 (mean 69). The mass was poorly mobile or fixed in 83% of patients. Cytopathology included SCCA in 39%, mucoueopidermoid carcinoma in 17%, poorly differentiated neuroendocrine tumors in 11%, adenocarcinoma in 6%, squamoid in 6%, and other in 22%. All patients were treated with primary radiation: 18 tumors were treated definitively with a mean dose of 6925 cGy while 1 tumor progressed during radiation and therapy was discontinued after 5425 cGy. Complete clinical response was seen in 8 tumors (42%) and none of these underwent parotidectomy however one patient developed mild facial weakness following radiation. A partial response occurred in 9 tumors (47%) 3 of which underwent subsequent surgical resection. A poor response occurred in 2 tumors (11%) one that had skull base erosion and developed facial paralysis and one that had minimal response locally and developed regional and distant metastasis during radiation. Of the three patients who underwent surgical resection one patient underwent a radical parotidectomy, one a superficial parotidectomy/temporal bone resection with sacrifice of the upper division of the facial nerve while the third patient was successfully excised with complete facial nerve preservation. Initial facial nerve function was House Brackman 1 in 88% and House Brackman 2 in 12%. Ninety percent of patients remain alive, with 61% free of disease. From an intent to treat perspective, of 19 facial nerves deemed at risk 1 developed complete facial paralysis during treatment, 1 developed partial facial paralysis during treatment, 1 required sacrifice of the main trunk of the facial nerve and 1 required sacrifice of the upper division. Fifteen nerves (79%) were intact with no change in function at the end of treatment utilizing this reversed order of treatment approach. Conclusion: Primary radiation therapy followed by surgery, if needed, can be a successful treatment strategy for treating carcinomas of the parotid that place the facial nerve at high risk of sacrifice at initial presentation. This series demonstrates excellent response rates, overall survival, and post therapy preservation of facial nerve function with avoidance of surgical risk to the facial nerve in the majority of cases.

P066 (COSM Poster #88)
GLAND PRESERVING THERAPIES FOR CHRONIC SIALADENITIS: A GERMAN AND U.S. COMPARISON. M. Boyd Gillespie, MD, Johannes Zenk, MD, Michael Koch, MD, Heinrich Iro, MD; Medical University of South Carolina; University of Erlangen.

Objective: Compare similarities and differences in techniques and outcomes in gland preserving salivary surgery for chronic sialadenitis at a German and U.S. tertiary-referral head and neck surgery program. Methods: A retrospective review was performed on two prospectively
created department databases to identify patients with chronic sialadenitis treated with gland preservation strategies. **Results:** A total of 1181 patients were treated at the German center over a 16 year period compared to 44 patients over 2 years at the U.S. center. There was a slight male predominance in Germany (53%) compared to a majority of female (54%) in the U.S. Salivary stones were a more common cause of gland obstruction in Germany compared to the U.S. (97% v. 52%), whereas ductal strictures were a more commonly diagnosed caused in the U.S. (25% v. 3%). All patients were initially treated with one or more gland preserving therapies including salivary endoscopy, sialodochoplasty, steroid infusion, Botox injection, ductal stenting, and extracorporeal shock wave lithotripsy. The most common treatment-related complication was ductal perforation which was observed in 2% of German cases and 4.5% of U.S. cases. A greater percentage of U.S. patients required gland excision compared to German patients (20% v. 2%). The majority of patients with intact glands were asymptomatic in both Germany and the U.S. (92% v. 85%) after mean follow-up times of 6 months (Germany) and 8 months (U.S.). Identified reasons for the higher rate of gland extrusion in the U.S. included less familiarity with endoscopic salivary techniques; a higher rate of ductal stenting after gland excision; related to previous dilation attempts; mean stone sizes on the upper limits (7 mm) of what can easily be removed via endoscopy; lack of access to lithotripsy; and performance of the procedures under general anesthesia making open conversion easier to perform. **Conclusion:** Gland preservation can be achieved using a variety of techniques in the majority of patients who present with chronic sialadenitis. It is anticipated that U.S. outcomes will start to mirror the superior rates of gland preservation observed in Germany as these techniques are mastered and applied to a wider population of potential patients.

**P067 (COSM Poster #89)**

**ONCOLOGICAL OUTCOMES AFTER SUPRACRICOID PARTIAL LARYNGECTOMY.** Isabel Sanchez-Cuadrado, MD, Alejandro Castro, MD, Ricardo Bernaldez, MD, Antonio Del Palacio, MD, Javier Galván, MD; La Paz University Hospital.

**Objective:** To review the oncological outcomes of supracricoid partial laryngectomy at our Department. **Methods:** Retrospective review of clinical records of patients that underwent supracricoid partial laryngectomy at our institution. Forty-one patients with glottic or supraglottic squamous cell carcinoma were identified. Data concerning patient and tumor characteristics, surgery, postoperative period, and follow-up were collected. **Results:** All patients were male, with a mean age of 56 years (range 38-71 years old). Thirty-seven percent of tumors were classified as locally advanced carcinomas (T3-T4). Thirty-three patients (80%) underwent supracricoid laryngectomy with crico-hyoido-epiglottopexy (CHEP). Epiglottis was resected in the other 8 patients. One patient died in the immediate postoperative period because of cardiac tamponade, six developed pneumonia, two had a postoperative bleeding that required reintervention and other two developed pharyngocutaneous fistula. The median follow-up period was 38 months. More than 85% of the patients completed more than 2 years of follow up. Five-year actuarial local control rate was 80%, being 91% for T1-T2 tumors and 61% for locally advanced tumors. Thirty-five patients (85%) preserved their larynx. The 8 patients that underwent total laryngectomy had a local recurrence or a regional recurrence that affected the larynx. No laryngectomy was performed for functional reasons. **Conclusions:** Supracricoid partial laryngectomy is an oncologically safe procedure to preserve laryngeal functions in selected patients with glottic and supraglottic carcinomas. Our results are comparable to those reported in the literature.

**P068 (COSM Poster #90)**

**LARYNGEAL FUNCTION PRESERVATION FOLLOWING SUPRACRICOID PARTIAL LARYNGECTOMY.** Alejandro Castro, MD, Isabel Sanchez-Cuadrado, MD, Ricardo Bernaldez, MD, Antonio Del Palacio, MD, Javier Galván, MD; La Paz University Hospital.

**Objective:** To analyze the functional outcomes of supracricoid partial laryngectomy at our Department. **Methods:** Forty-one patients with glottic and supraglottic carcinomas underwent supracricoid partial laryngectomy at our institution since it was introduced in 1998. Data concerning time to decannulation and oral intake were collected from the clinical records. Twenty-seven patients were alive, preserved their larynx and had a minimum follow-up of 3 months at the time of this survey. All but one accepted participation in a functional evaluation that includes a voice questionnaire (Voice Handicap Index), a swallowing questionnaire (M.D. Anderson Dysphagia Inventory) and objective measurements of voice quality (maximum phonation time and maximum intensity). **Results:** Ninety-eight percent of the patients were decannulated, with a median time to decannulation of 14 days. Every patient achieved oral intake, at a median time of 18 days after surgery. Median Voice Handicap Index (VHI) score was 26, with 75% of patients scoring less than 40 (the VHI score ranges from 0 to 120; lower scores represent less subjective handicap). Median M.D. Anderson Dysphagia Inventory (MDADI) score was 92, with 75% of patients scoring 80 or over (the MDADI score ranges from 20 to 100: higher scores correspond to better swallowing function). Median maximum phonation time was 12 seconds (Q1 = 8 sec; Q3 = 14 sec). Median maximum intensity was 99 dB (Q1 = 95 dB; Q3 = 100 dB). **Conclusions:** Laryngeal function can be preserved with supracricoid partial laryngectomy in selected patients with glottic and supraglottic carcinomas. Quality of life measurements demonstrate excellent voice and swallowing following this procedure.

**P069 (COSM Poster #91)**

**3D ANALYSIS OF NEOGLOTTIS AFTER SUPRACRICOID LARYNGECTOMY WITH CHEP.** Yutomo Saine, Meijin Nakayama, Makito Okamoto, Masahiko Takeda, Syunsuke Miyamoto; Seiichi Hayashi Department of Otorhinolaryngology, Kitasato University School of Medicine.

**Objective:** To morphologically analyze the three-dimensional (3D) configuration of the neoglottis after supracricoid laryngectomy with crico-hyoido-epiglottopexy (SCL-CHEP). **Patients and Methods:** Multidetector helical CT scanning was performed for 21 patients who received SCL-CHEP. Fine cut CT image was evaluated at a slice thickness of 1.25 mm. Then 3-D models of the neolarynx were reconstructed using INTAGE Realia (KGT Inc) on a Windows computer. In this study, ossification of the cricoid and arytenoid cartilages and virtual endoscopic images of the airway were visualized on 3-D images. **Results:** 1) Mobility of arytenoid cartilages; In patients with bilateral arytenoids remaining, mobility of arytenoids was well preserved. The mobility was even better in patients with only one arytenoid. There were no findings suggesting arytenoid dislocation. 2) Morphology of the airway; Two types of airway configurations, one with a single stream and the other with a combination of several streams, were observed during phonation. There were significant differences between these two groups in terms of MPT and VHI analyses. **Discussion:** Because neolarynx morphology is directly related to postoperative phonetic function, 3D imaging of the airway might be an important tool to evaluate the surgical result. Airway configuration demonstrated useful information related to the post SCL-CHEP neolarynx. The preserved arytenoid tended to be rotated excessively inward, phonation may have also occurred in various airways outside of the arytenoid region followed by mucosal vibration, which may be a sound source. This information may be useful for improving the surgical technique so that better laryngeal function can be attained.

**P070 (COSM Poster #92)**

**RESTAGING PRIMARY SITE BIOPSY CAN OPTIMIZE SELECTION OF PRIMARY THERAPY IN HIGH STAGE (III/IV) SQUAMOUS CANCER.** H J Wanebo, MD, R Rathore, MD, K Radie-Keane, MD, N Ready, MD, A Nadeem, MD, J Belliveau, PhD, P Nigri, MD, P Chougule; Landmark Medical Center Woonsocket, RI USA, Roger Williams Medical Center Providence, RI USA, Rhode Island Hospital Providence, RI USA, Brown University Providence, RI USA.

**Objective:** Neoadjuvant therapy for stage III/IV head and neck cancer (HNCa) provides an opportunity for primary site organ preservation and improved progression free survival. Although clinical observation of response is commonly used to select final primary site therapy (continued chemo radiation (CRT) vs. surgical salvage), restaging biopsy appears to be a more precise method of selecting optimum primary site therapy. **Materials & Methods:** A consecutive series of neoadjuvant protocols by the Brown Oncology Group (BrUOG) has focused on restaging primary site biopsy to select therapy of Stage III/IV squamous cancer since 1995. Initially concurrent preoperative Paclitaxel (P) (60mg/ M2) + Carboplatin (C) (2AUC) (H & N53) or P 40mg/M2 + C (1 AUC) + RT
might have an independent direct lymphatic route to retropharyngeal node. Although the post-operative radiation may have a negative impact in terms with the functional outcome after organ-preservation surgery, it must be considered for the cancer invaded to the posterior wall of pharynx.

P072 (COSM Poster #94)
ONCLOGIC AND FUNCTIONAL OUTCOMES OF LASER SURGERY FOR GLOTTIC RECURRENCES AFTER RADIOThERAPY. Giorio Peretti, MD, Cesare Piazza, MD, Francesca Del Bon, MD, Stefano Mangili, MD, Daniela Cocco, MD, Piero Nicolai, MD; Department of Otorhinolaryngology - Head and Neck Surgery, University of Brescia, Italy.

Introduction: Transoral laser surgery (TLS) for early and intermediate glottic cancer is considered a valuable option, with good oncologic and functional outcomes. Despite this, radiotherapy (RT) is still considered the gold standard therapeutic strategy in many centers. However, TLS surely represents the treatment of choice in selected local recurrences after RT. Material and Methods: Between February 1995 and September 2007, 30 patients (29 males, 1 female; mean age, 67 years; range, 49-86) affected by T1-T2 glottic cancer, previously submitted to RT, were treated by TLS at our Institution for recurrence of local disease. Oncologic outcomes for the entire cohort of patients were evaluated by the SPSS statistical package. Functional outcomes in terms of speech and swallowing were analyzed in a subset of 9 patients by Voice Handicap Index (VHI), GRBAS scale, Multi Dimensional Voice Program (MDVP), MD Anderson Dysphagia Inventory (MDADI) questionnaire, videendoscopy of swallow, and videofluoroscopy (both graded according to the Donzelli’s scale). Hospitalization time and complication rate were retrospectively evaluated by charts review.

Results: Endoscopic resections performed, according to the European Laryngological Society classification, were as follows: 21 Type I, 1 Type IV, and 8 Type V cordectomies. Postoperative T category was as follows: 17 T1 (12 T1a and 5 T1b), and 13 T2. At last consultation (minimum follow-up, 24 months), 21 patients were free of disease, 2 died of disease, and 7 died of unrealted causes. Seven patients underwent total laryngectomy for persistent or recurrent disease. Five-year disease specific, disease free survivals, and organ preservation rate according to the Kaplan-Meier curves were 95%, 63%, and 77%, respectively. The mean value of VHI and MDADI were 25 and 88%, respectively. GRBAS scale mean values for each domain resulted as follows: 1.7 for G, 1.6 for R, 1.2 for B, 1.1 for A, and 1.1 for S. The MDVP parameters were: 3.8 for Jitter%, 7.6 for Shimmer%, 0.304 for Noise to Harmonic Ratio, and 7.37 seconds for Maximum Phonation Time. Grade of aspiration according to the Donzelli’s scale for videendoscopy of swallow was normal in 80% of patients, with vestibule penetration without aspiration in 25%, and with tracheal aspiration in 25%. For videofluoroscopy, the distribution was 50% with normal swallow and with tracheal aspiration in the other 50%. Hospitalization time ranged from 3 to 9 days (mean, 4). Early complications were not encountered. Three patients experienced late thyroid cartilage chondritis (n=1) or chondronecrosis (n=2), which were successfully treated by hyperbaric oxygen therapy. One patient needed nasogastric feeding tube for persistent dysphagia, which was removed 1 week later after swallow rehabilitation. Conclusions: TLS for T1-T2 glottic recurrences after RT allows good oncologic outcomes. In spite of its mini-invasiveness, swallow can be significantly impacted in case of Type V cordectomies, even though prolonged nasogastric feeding tube is the exception instead of the rule.

P073 (COSM Poster #95)
ENDOSCOPIC CO2 LASER SURGERY IN ELDERLY PATIENTS WITH EARLY LARYNGEAL CANCER. AUGUSTO CATTANEO, MD, MOHSEN ANSARIN, MD, STEFANO ZORZI, MD, MARIA ANGELA MASSARO, PhD, LUIGI SANTORO, MSc, FAUSTO MAFFINI, MD, FAUSTO CHIESA, MD; EUROPEAN INSTITUTE OF ONCOLOGY.

Objective: to evaluate the impact of endoscopic excision of early glottic cancer in terms of feasibility, disease-free survival (DFS), overall survival (OS) and organ preservation in elderly patients. Design: retrospective single institution study. Setting: Tertiary referral center. Patients: Between January 2000 and May 2008, 122 patients (male/ female ratio 113/9; median age 74 years (70-88 years) with previously untreated early laryngeal cancer were treated with CO2 laser at the
Division Head and Neck Surgery of European Institute of Oncology Milan Italy. **Interventions:** Inclusion criteria were cTis, cT1 or cT2, no contraindications to general anesthesia, aging (> 70 years) and signed consent. Comorbidities and intra-operative risks are assessed using ASA criteria. Surgical technique (according to the European laryngological classification) was type I–V cordectomies. All operation was with curative intent. Resection margins are evaluated and defined negative (> 1 mm from the tumour edge), close (≤ 1 mm) and positive (presence of tumour tissue on resection margins). Patients with clear margins, and those with LNM on the margins underwent clinical follow up in accordance with our guidelines. Patients with positive margins suitable for new endoscopic resection underwent resection 30–40 days later, and patients with positive margins not suitable to further endoscopic resection underwent adjuvant radiotherapy.

**Results:** The pathological staging were: pT0 (19 patients, 15.6%; calculated only in patients with previous biopsy), pTis (18 patients, 14.7%), pT1a (53 patients, 43.4%), pT1b (16 cases, 13.1%), pT2 (15 cases, 12.3%) and pT3 for invasion of the paraglottic space in 1 patient (0.8%). The median follow up was 57 months, (5–116 months); 102 patients (83.6%) are alive without disease; 1 patient (0.8%) is alive with disease; 1 patient (0.8%) died from local disease, while 16 patients (13.1%) died from other causes without evidence of loco-regional disease and 3 patients (2.4%) died from the laryngeal cancer. There were post-surgical complications in 5 patients: subcutaneous emphysema, atrial flutter, respiratory disease and two with mental confusion.

In 11/122 (9%) patients we observed a second primary tumour during the follow up period: 9/11 patients are however alive, while 2/11 are dead for the second tumour (pulmonary cancer). **Main-Outcome:** Preservation of the larynx was obtained in 118 cases (96.7%), with a 10-year OS of 84.4 % and a 10-year DFS of 94.3%. No patient died for reason correlated to the anaesthesia method. **Conclusions:** Medical conditions are critical to the assessment choice for a open neck conservative surgery and in particular pulmonary and heart functions. Furthermore, if we consider the choice of an exclusive radiation treatment in an old patients, we have also to analyze not only the patient's compliance of a treatment time of 6 or more weeks, but also long distance travel to the radiation center and the familial organizing difficulties: all these things, above all nowadays, may prefer short time surgery over radiation therapy. In our series, CO2 laser removal of an early glottic cancer in elderly patients can be often considered a feasible, short hospitalization and no-risk procedure without compromising laryngeal preservation, other different treatments and quality of life of the patients.

---

**P074 (COSM Poster #96)**

OUTCOMES AFTER PRIMARY SURGICAL TREATMENT OF T1-T2 NO SQUAMOUS CELL CARCINOMA OF THE OROPHARYNX. Tania B Souza, MD, Marcos B Carvalho, MD PhD, André L Carvalho, MD PhD, Luiz P Kowalski, MD PhD; Hospital A C Camargo, Hospital do Cancer de Barretos, Hospital Heliodopis.

**Aims:** the purpose of this study was to review the oncologic outcomes of patients with early-stage squamous cell carcinoma of the oropharynx that underwent surgical treatment with or without postoperative radiotherapy at three Head and Neck Surgery Departments. **Study Design:** Retrospective chart review at 3 institutions. **Materials and Methods:** The records of 92 consecutive patients, 82 (89.1%) men and 10 women with a median age of 57.2 years (range: 42–79), who had clinical stage I and II SCC of the oropharynx were reviewed. The patients were treated from 1990 to 2005. All included patients were treated with radical surgery followed or not of postoperative radiotherapy. **Results:** Thirty-five patients had tumors at stage I and 57 at stage II. A level I to V neck dissection was performed on 20 patients, 18 patients underwent a level I to III selective neck dissection and 8 a level I to IV neck dissection. Sixty-three patients had surgery only; 29 had surgery and postoperative radiotherapy, and 5 had surgery and chemoradiotherapy the median hospital stay was 5.47days. Tracheostomy was done in 45 patients, and 44 had decannulation. The tracheostomy was needed for a mean duration of 38.1 days. Temporary feeding tubes were placed in 52 patients, for a mean of 40.5 days; of these, 51 had the tubes removed. During follow-up, there were 22 (23.9%) local recurrences, 12 neck recurrences (13.0%), and 6 distant metastasis (6.5%). Thirty-two patients (34, 78%) presented second primary cancers; fifteen died, 12 are alive and free of disease. Some of these second localizations were six hypopharynx, six oral cavities, five lung and two larynx/hyopharynx. The 5-year rate of cancer specific survival was 81.6%. There was no significant difference concerning tumor stage (p=0.761), perineural infiltration (p=0.875) and vascular embolization (p=0.384). The 5-year cancer specific survival rates for negative and involved margins were 84.8 and 72.9%, respectively, but the trend toward a poorer prognosis was not statistically significant (p=0.478). **Conclusions:** We concluded that surgical approach on T1-T2 NO oropharyngeal cancers is as efficient as radiotherapy. Moreover, surgery alone makes it possible to spare patients of long term side effects of radiotherapy. It also allows salvage surgery due to loco-regional recurrences or second primary cancers in a non-radiated area with lower morbidity and mortality. It is possible to keep radiotherapy to treat a second primary cancer if necessary.

---

**P075 (COSM Poster #97)**

THE MEDICAL PERCEPTION OF QUALITY OF LIFE AND ITS IMPACT ON THE CHOICE OF THE TREATMENT IN HEAD AND NECK CANCER. Pierre Demeur, MD PhD; Alexandre Biermans, MD, Pierre Moreau, MD PhD; C.H.U. Sart-Tilman, Liège, Belgium.

**Purpose:** Patients with head and neck cancer are willing to undergo aggressive treatments and accept alterations in quality of life in order to attain recovery or increase longevity. The general practitioners play a central role in patient care and can influence treatment choice. It is not clear how these physicians perceive alterations in quality of life. This study examined whether physicians considered changes in quality of life when choosing a treatment for head and neck cancer.

**Materials/Methods:** 3000 general practitioners received a questionnaire in the mail regarding their opinions on quality of life for patients with cancer. They assessed the impacts of symptoms, treatments, and side effects. **Results:** 506 responses were received and evaluated. A majority of physicians (85.7%) thought that quality of life must be considered when choosing a treatment, even if it meant less chance of survival. Moreover, 82.4% felt that proposing no treatment was justified if treatment meant an impaired quality of life. Most physicians thought that the quality of life was worse for patients with cancer in the head and neck than for patients with cancer in any other location. Moreover, physicians thought that the patient (88.2%) and the family doctor (89%) should participate in deciding on the choice of treatment, but also answered that they were not sufficiently informed on head and neck cancer (76.3%) and the resulting changes in quality of life (75.2%). The symptoms ranked highest for impacting quality of life were pain and breathing, followed by feeding requirements, voice, and physical appearance. Radiotherapy was thought to offer the best quality of life before surgery and chemotherapy. **Conclusion:** General practitioners consider changes in quality of life as very important factor in treating patients with head and neck cancer. Compared to the patient’s point of view, quality of life seems to have a more important influence on decision-making within the medical community. They felt under-informed about head and neck cancer and the resulting quality of life. Taking into account the central role of these physicians in the management of the patient, improving the information given to the general practitioners should be considered a high priority.

---

**P076 (COSM Poster #98)**

ENDOVASCULAR TREATMENT OF HEMORRHAGE IN OF PATIENTS WITH HEAD AND NECK CANCER. Candice C Colby, MD, Amy Chen, MD MPH FACSc; Emory University.

**Introduction:** Interventional radiology has evolved to include multiple endovascular treatment options for hemorrhage from head and neck cancer with improved outcomes over surgical intervention. **Study Objectives:** We describe our experience with endovascular therapy for treatment of hemorrhage and neck cancer patients at a large tertiary center over a ten-year period. **Methods:** A retrospective chart review of hospital records was performed to identify patients with a head and neck cancer diagnosis who underwent endovascular intervention for hemorrhage from 1999-2009. Data collected included demographics, history of cancer diagnosis and treatment, endovascular procedures performed, complications, episodes of recurrent bleed, and survival. **Results:** There were a total of 19 patients identified that underwent endovascular procedures for hemorrhage from head and neck cancer. Our initial success rate is 78%, with an overall success of 89%. There
Poster Papers

were two major complications- one cerebrovascular accident and one pharyngocarotid fistula following erosion of a stent into the pharynx. No patients died as a complication of intervention. Conclusion: We observed endovascular therapy to be a highly successful method of controlling hemorrhage in head and neck cancer patients with multiple advantages over surgical intervention. Interventional radiology is an essential resource in treating patients with head and neck hemorrhage.

P077 (COSM Poster #99)
FUNCTIONAL AND COSMETIC OUTCOMES OF PATIENTS WITH MAXILLECTOMY DEFECTS RECONSTRUCTED WITH VASCULARIZED FREE TISSUE TRANSFER, Jamie J Tibbo, MD MSc FRCSC, Jeffrey R Harris, MD FRCS, Jana Reiger, PhD, Hadi Seikaly, MD FRCS; University of Alberta.

Objectives: To assess the functional and cosmetic outcomes of patients with maxillectomy defects reconstructed with vascularized free tissue transfer. Methods: We analyzed prospectively collected data on 35 patients with maxillectomy defects reconstructed with vascularized free tissue transfer (mainly radial forearm and fibula free flaps). Functional outcomes after reconstruction was assessed using a comprehensive collection of outcomes parameters including: PERCI-SARS for assessment of velopharyngeal oroface area, nasometer for assessment of nasalance, and standardized recordings for assessment of speech intelligibility. Cosmetic analysis was performed using eight naive viewers providing assessment via a 10 point Likert scale. Results: In all parameters measured for both functional and cosmetic outcomes, results were excellent for free tissue reconstruction. Conclusions: Patients and reconstructive surgeons should expect excellent functional and cosmetic results with reconstruction of maxillectomy defects with free tissue transfer. Our next step will be to compare free tissue transfer reconstruction with the gold-standard at most institutions; palatal obturator.

P078 (COSM Poster #100)
THE IMPACT OF MULTIFOCAL PATTERN OF INVASION ON PATIENT OUTCOMES IN ORAL SQUAMOUS CELL CARCINOMA, Michael L McNeil, MD, Martin J Bullock, MD FRCP, Robert D Hart, MD FRCS, Jonathan R Trites, MD FRCS, S M Taylor, MD FRCS FACS; Dalhousie University.

Objectives: Multifocal squamous cell carcinoma (MSCC) of the oral cavity is thought to be associated with poor patient outcomes. We sought to determine the frequency of MSCC and associated outcomes to determine if the current standard of treatment is sufficient. Methods: 70 consecutive patients undergoing hemiglossectomy or total glossectomy between January 2000 and August 2008 were identified. Results: Worst Pattern of Invasion (WPOI), Histological Risk Assessment (HRA), local recurrence (LR) and mortality were determined. Conclusions: The results suggest that MSCC correlates with both LR and mortality. These data may impact standard of care for oral cancer.

P079 (COSM Poster #101)
THE NATURAL HISTORY OF UNTREATED SQUAMOUS CELL CARCINOMA OF THE HEAD & NECK, JEAN-PIERRE JEANNON, MD FRCS, ENYI OFU, MD FRCS, RICARD SIMO, MD FRCS; GUY'S & ST THOMAS' NHS FOUNDATION TRUST.

Introduction: Head & Neck squamous cell carcinoma (HNSCC) remains a serious management problem as the mortality is still high despite advances in therapeutic techniques. There are several factors which are thought to contribute to the poor outcome these include late advanced stage at presentation, the presence of significant co-existing co-morbidity, patients' refusal to accept morbid therapies and the high incidence of second primary carcinomas. A significant proportion of patients may present with one or all of the above factors which may render them unsuitable for treatment other then in a palliative care. The purpose of the paper is to analyse and present the outcome of patients with HNSCC who have not undergone any form of treatment in our institution. Methods: The setting of this study is a regional tertiary referral cancer centre where all patients with HNSCC in the South East London Cancer network are treated in this centre. All patients with a primary diagnosis of HNSCC were included in this study if there were deemed unsuitable for surgery, chemotherapy or radiotherapy. Results: For the study period of 01/01/06 until 31/12/07, 450 new patients with HNSCC were managed by the head and neck multidisciplinary team. From this group 44 (9 %) patients received no form of treatment in terms of radiotherapy, surgery or chemotherapy and received best supportive care only. The mean patient age was 74 years range (47-97). The Larynx (51%) was the most commonly involved primary tumour site, followed by the Oropharynx (25%), Oral cavity (9%), Hypopharynx (9%) and other sites (6%). As expected with this selected subgroup advanced primary stage was seen in the majority of cases: 32/44 (70%) were T4 at presentation, 8/44 (18%) were T3. Cervical lymph node involvement was seen in 82% of patients. Distant metastases were seen in 21/44 = 47% of patients the majority of these were in the lung followed by bony metastases. The reason for no treatment was self-harm or patients who were too frail or have other medical conditions. The most frequent co-morbid factor included: multiple distinct metastatic disease 21/44 = 47%, severe co-morbidity / organ failure 18/44 = 41% and patient refusal 5/44 = 12%. Multivariate analysis did not identify any significant factor that affected survival. The median survival for untreated patients was 11.5 months all patients died within 30 weeks. Conclusion: Up to 9% of patients diagnosed with HNSCC are found to be unsuitable for any form of treatment due to patient refusal, severe co-morbidity or multiple distinct metastatic disease. The natural untreated HNSCC is 100% mortality within 30 weeks. Multivariate analysis does not appear to identify a single factor which significantly alters survival.

P080 (COSM Poster #102)
HIGH RATES OF LOCAL AND REGIONAL RECURRENCE IN LOCALLY ADVANCED SQUAMOUS CELL CARCINOMA OF THE HARD PALATE AND MAXILLARY ALVEOLUS, Luc G Morris, MD, Snehal G Patel, MD, Jatin P Shah, MD, Ian Ganly, MD PhD; Memorial Sloan-Kettering Cancer Center.

Introduction: Because squamous cell carcinoma (SCC) of the hard palate and maxillary alveolus is uncommon compared with other oral cavity subsites, contemporary outcomes data are sparse. The objective of this study was to determine survival and recurrence outcomes in patients with cancer of the hard palate and maxillary alveolus, and to identify factors predictive of these outcomes. Methods: Retrospective cohort study of 139 patients with SCC of the hard palate and maxillary alveolus treated at Memorial Sloan-Kettering Cancer Center between 1985 and 2006. Elective neck dissections were not routinely performed. Patient, tumor and treatment details were recorded from patient charts. Overall survival (OS), disease-specific survival (DSS), recurrence-free survival (RFS), local recurrence-free survival (LRFS) and regional recurrence-free survival (RRFS) were calculated using the Kaplan-Meier method. Successful salvage of recurrence was defined as >24 months survival. Factors predictive of these outcomes were identified on Cox multivariable regression. Results: The 5 year OS was 57.8%, DSS 70.7%, and RFS 53.5%. Recurrence occurred in 41.9% of patients; 23.6% developed local recurrence, and 28.4% developed regional recurrence. The 5 year LRFS was 60.4%, and RRFS was 59.2%. Recurrence was significantly associated with pathologic T stage: pT4 patients experienced a cumulative local recurrence rate of 37.0%, and regional recurrence rate of 38.1%. Pathologic T stage was the sole variable independently predictive of OS, DSS, RFS, LRFS and RRFS on multivariable analysis. Successful salvage was achieved in 41.9% of local recurrences, and 34.4% of regional recurrences. Conclusion: Patients with primary tumors of the hard palate and maxillary alveolus staged T2-T4 exhibit high rates of local and regional recurrence, many of which are not successfully salvaged. Adjuvant radiation to the primary site, and elective treatment of the N0 neck, should therefore be considered for locally advanced SCC of the hard palate and maxillary alveolus.
SQUAMOUS CELL CARCINOMA OF THE ORAL TONGUE IN THE PEDIATRIC AGE GROUP: A MATCHED-PAIR ANALYSIS OF SURVIVAL

Introduction: Squamous cell carcinoma (SCC) of the oral tongue is uncommon in young patients, and rare in the pediatric age group (ages 20 and younger). It is believed to exhibit aggressive behavior and carry poor prognosis in younger patients. It has been observed that survival of oral tongue SCC in pediatric patients has not been studied. The objective of this study was to compare outcomes of a pediatric cohort of patients compared with a matched cohort of adult patients. Methods: Retrospective matched-pair cohort study of 10 pediatric and 40 adult patients diagnosed with SCC of the oral tongue who were treated at Memorial Sloan-Kettering Cancer Center. Adult patients were matched to pediatric patients 1:1 for gender, tobacco history, tumor status, nodal status, distant metastasis status, surgical procedure, and administration of adjuvant radiotherapy. Overall survival (OS), disease-specific survival (DSS), and recurrence-free survival (RFS) were calculated using the Kaplan-Meier method. Results: Five year OS was equivalent in the two groups: 70.0% in the pediatric group and 64.0% in the adult group (p=0.97). Five year DSS was also equivalent: 80.0% in the pediatric group, and 76.0% in the adult group (p=0.90). Five year RFS was 70.0% in the pediatric group and 78.4% in the adult group (p=0.54). Conclusions: When pediatric and adult patients were matched for gender, tobacco history, TNM status, surgical procedure and adjuvant radiotherapy, outcomes for OS, DSS and RFS were equivalent. Pediatric patients with SCC of the oral tongue should be managed similarly to adult patients.

SURGICAL MANAGEMENT OF UPPER AIRWAY RECONSTRUCTION: SUBMANDIBULAR GLAND TRANSFER & MACROVASCULAR FREE FLAP OPTIONS

Background: Radiation therapy is commonly used in the treatment of head and neck malignancies. Xerostomia is a permanent devastating side-effect of head and neck irradiation. Ten years ago, our group described the submandibular gland transfer procedure which involves moving a submandibular gland outside the radiation field, forward into the submental space. The gland is mobilized by transecting the facial artery, with the gland receiving retrograde blood-flow. The gland is spared from radiation, and function is preserved. Methods: A 10-year review of the submandibular gland transfer procedure was performed. The patients' salivary flow and quality of life was evaluated. A review of the world literature of this procedure was performed. Results: At our centre, 349 patients had the procedure over the 10 years since it description. Xerostomia was prevented in 81% of the patients. A review of the literature showed similar results by other investigators. Conclusion: Submandibular gland transfer has been used successfully in the prevention of radiation-induced xerostomia in our centre for 10 years. This method has been adopted by several centres across Canada and Internationally.

SURGERY FOR PAPILLARY THYROID CARCINOMA: IS LOBECTOMY ENOUGH?

Introduction: The optimal surgical treatment for papillary thyroid carcinoma (PTC) continues to be controversial. Recently, a population-based study demonstrated improved overall survival (OS) in patients undergoing total thyroidectomy over lobectomy for tumors \( \geq 1 \text{cm} \). However, questions arise regarding treatment effects on disease-specific survival (DSS), as well as other variables such as histologic subtypes and radiation treatment. The objective of this study is to further our understanding of treatment of PTC. Methods: The Surveillance, Epidemiology, and End Results (SEER) Program database was searched for patients who had undergone surgery for PTC. Between 1988-2001, 27,724 patients were included. In our analysis, factors investigated included: tumor size, tumor extent, nodal status, age, gender, race, surgical extent, radiation therapy, and histology. Hazard Ratios with 95% CI's were computed with Cox regression models. Results: Of the total 22,724 PTC patients, 5,964 patients underwent lobectomy. There were 2,138 total and 471 disease-specific deaths. Multivariate analysis revealed no survival difference between total thyroidectomy and lobectomy. Increased tumor size, extrathyroidal extent, positive nodal status, and increased age displayed significantly \((p<0.001)\) worse DSS and OS. Follicular PTC subtype did not affect DSS or OS. Across all tumor sizes, patients receiving radioactive iodine had improved DSS and OS. Patients undergoing adjuvant external beam radiation had poor OS (HR=1.3, \(p<0.001\)) and DSS (HR=2.12, \(p<0.001\)). Conclusions: The results of this study call into question the current PTC surgical recommendations of total thyroidectomy based on tumor size, as this may not affect survival across all populations. Additionally, the current use of external beam radiation for PTC should be reevaluated.
P085 (COSM Poster #107)

TREATMENT OF THE N0-NECK IN CANCER OF THE UPPER AERODIGESTIVE TRACT: SELECTIVE NECK DISSECTION VERSUS “WAIT-AND-SEE”. Wolfgang Steiner, MD, Stefan Plügquett, MD, Christoph Matthias, MD, Martina Kron, PhD, Alexios Martin, MD; Department of ORL - HNS, University of Göttingen, Germany / Department of Surgery, Roland Hospital, Bremen, Germany / Institute of Biometrics, University of Ulm, Germany / Department of Phoniatrics, Medical University of Berlin, Germany.

Introduction: Different opinions exist for appropriate management of the clinically N0-neck in Cancer of the Upper Aerodigestive Tract (UADT). As neck dissections (ND) can result in significant morbidity, especially when performed as modified radical ND, it was the purpose of this study to determine the circumstances under which a „wait-and-see“ policy could safely be applied. Procedures: A retrospective chart review was carried out. All patients with cancer of the UADT (pT1-4, except T1a vocal cord cancer) and without clinical evidence of neck disease (N0) were eligible. Patients with local and loco-regional recurrences were excluded. End points for statistical analysis were the occurrence of late neck metastases and disease specific survival. Results: Four hundred and twenty-five (425) patients were eligible for inclusion. Five-year Kaplan-Meier estimates: regional control was 92% for patients who underwent selective neck dissection and 83% for the „wait-and-see“ group. Statistical analysis regarding tumor localisations and pT-categories was carried out and will be discussed, as well as the implications of „wait-and-see“ on survival. Conclusions: This study indicates that postponing elective selective neck dissection (SN) in pT1 and pT2 cancer of the UADT should be performed in most cases of pT3 and pT4 cancer. Additionally, this study supports the notion that cutting through the primary tumor with a CO2-laser does not result in a higher rate of neck metastases.

P086 (COSM Poster #108)

FUNCTION PRESERVING TRANSORAL LASER MICROSCUROY (TLM) FOR CANCER OF THE ORAL CAVITY - AN ANALYSIS OF 203 CASES. Alexis Martin, MD, Martin C Jäckel, MD, Hans Christiansen, MD, Matthias Meyer, MD, Martina Kron, PhD, Wolfgang Steiner, MD / Dpt. of ORL, Univ. of Göttingen, Germany / Dpt. of ORL, Helios Hosp., Schwerin, Germany / Dpt. of Radiat. Oncol., Univ. of Göttingen, Germany / Inst. of Biometrics, Univ. of Ulm, Germany / Dpt. of Phoniatrics, Medical Univ. of Berlin, Germany.

Objectives: Cancer of the oral cavity poses special therapeutic challenges. Open surgery often results in a significant impairment of swallowing and speech function and therefore reduces quality of life. Purpose of this study was to assess the viability of TLM as a tissue sparing and thus function preserving surgical alternative to standard treatment and to compare its oncological and functional results to those of open surgery and radio(chemo-)therapy. Methods: A retrospective chart analysis was carried out. Patients with previously untreated cancer of the oral cavity were eligible for inclusion. Exclusion criteria were pre-treatment, simultaneous second primary cancers and N3 neck disease. 203 patients matched the inclusion criteria and were treated by TLM with or without selective neck dissection and/or postoperative radio(chemo-) therapy. Results: All 203 patients were treated by TLM. The median follow-up period was 60 months. Recurrence-free survival (5-year Kaplan-Meier) ranged between 72 % for stage I and 47 % for stage IV tumors. Postoperatively, no nasogastric feeding tube was required by 54 % of the patients, only 2 % required a permanent gastrostomy tube. Conclusions: Transoral Laser Microsurgery is a valid and cost-effective alternative in the treatment of oral cavity cancer. Oncological results are comparable to standard therapeutic regimen, while functional results tend to be better.

P087 (COSM Poster #109)

IS ACUTE MUCOSITIS HEALING FREQUENTLY OBSERVED BEFORE THE END OF RADIOTHERAPY IN HEAD AND NECK CANCER PATIENTS? Andrzej Węgoda, MD PhD, Krzysztof Składowski, MD PhD, Tomasz Rutkowski, MD PhD, Marcin Hutnik, MD, Boleslaw Pilecki, MD PhD, Maria Golen, MD PhD, Wiesława Przeorek, MD PhD, Beata Łukaszczyk-Widiel, MD; Maria Sklodowska-Curie Memorial Cancer Center and Institute of Oncology, Gliwice Branch, Poland.

Purpose: Acute mucosal reactions (AMR) always accompany radiotherapy in patients with head and neck cancer. They reflect different intensity and duration in dependence of fractionation schedule. There is well known phenomenon of accelerated repopulation in acute responding tissues during radiotherapy and it is also observed within healthy mucosa in head and neck region. This report describes types of courses of AMR observed during radiotherapy in patients with head and neck cancer with particular consideration of healing processes before ending of irradiation. Material: Seventy-eight patients in age 39-74 years with oral cavity (21 pts), pharyngeal (37 pts) and laryngeal (20 pts) cancer irradiated with conventional (AF-33 pts), accelerated (AF-33 pts), hyperfractionated (HPEFX-8 pts) and hypofractionated (HPOFX-4 pts) scheme with radical intention. Methods: Acute mucosal reactions were evaluated everyday with modified Dische score system. Daily scores (maximum may be 24) were subsequently used to draw curves presenting individual patient AMR courses, which were then analyzed. There were 3267 examinations during radiotherapy in all patients. Results: Latency period between start of radiotherapy and onset of AMR was observed in all patients and ranged between 3 and 14 days - it was 6 days for HPEFX (3-9 days), 7,5 for AF (5-12 days), 8 for HPOFX (3-14 days) and 9 for CF (4-14 days). Difference between CF and HPEFX or AF was significant, p<0.05. Three types of AMR course were next observed: (1) continuous increase up to the end of radiotherapy, (2) plateau phase observed after growth phase and lasting up to the end of irradiation and (3) course with healing phase observed after short plateau phase: (1) Continuous increase of AMR was observed in 18% CF and 21% AF patients. It was noted in 50% HPOFX patients and was not observed in HPEFX group. (2) Plateau phase was noted in 79% CF, 67% AF, 50% HPOFX and in all 8 HPEFX patients. Plateau, if observed, begun between 13 and 30 day of radiotherapy. It started in average in 19 day of radiotherapy in AF and HPOFX patients, in 21 day in CF patients and in 24,5 for HPEFX patients. (3) Healing during radiotherapy was observed in 21% pts. For CF group it was noted in 27% patients in average in 36,5 day of radiotherapy, in AF in 21% pts, in average in 32,5 day of radiotherapy. Healing during radiotherapy was not observed in pts irradiated according to HPEFX and HPOFX scheme. Conclusions: Acute mucosal reactions during radiotherapy may have different course when curves are analyzed in detail. Wide range of beginning the first AMR symptoms was noted in all fractionation schemes what reflects different individual radiosensitivity. Plateau phase was observed in majority irradiated patients. Symptoms of healing was observed in about one/fourth patients irradiated according to HPEFX scheme. Healing phase was not observed routinely moderate. In HPEFX, where volume of irradiated tissue was large, no signs of healing was noted during radiotherapy. Lack of healing in HPOFX may be result short treatment time (5 weeks), although analyzed group was too small.

P088 (COSM Poster #110)

INCIDENCE OF LATE ONSET DYSPHAGIA IN HEAD AND NECK CANCER PATIENTS. Nitin A Pagedar, MD, Aaron M Fletcher, MD, Lucy H Karnell, PhD, David C Shonka, MD, Henry T Hoffman, MD, Gerry F Funk, MD; University of Iowa.

Dysphagia is a common and well-recognized problem for head and neck cancer patients, and can result from several factors, including muscular dysfunction, mucosal abnormalities, and xerostomia. One recent retrospective study found that 75% of patients reported dysphagia after head and neck cancer treatment. Possibly the most interesting finding was that dysphagia symptoms were more likely to be present with treatment time elapsed since, as well as the impact of therapy. However, many patients have examined post-treatment dysphagia in head and neck cancer patients tend not to look beyond the 1 year-post-treatment mark. We performed a retrospective review to determine the incidence of late-onset dysphagia.
in patients who have been treated for head and neck cancer, and to identify factors associated with this pattern of dysphagia. After obtaining IRB approval, we searched our institution’s cancer registry for patients treated between January 1995 and December 2007 for cancer of the oral cavity, oropharynx, nasopharynx, hypopharynx, larynx, and salivary glands. We recorded demographic information and data on cancer treatment as well as dysphagia-related procedures, defined as esophageal dilation and gastrostomy tube placement. There were 447 patients that had both a diagnosis of cancer and a dysphagia-related procedure, representing about 15% of all registered head and neck cancer patients. Fifty of these patients (11%) had their first dysphagia-related procedure more than three years after their diagnosis of cancer, and 7% more than 5 years after diagnosis. Of the patients undergoing first procedures after 3 years, 68% had larynx and oropharynx primary sites. Surgery and radiotherapy was at 49% the most common treatment modality of the late-onset group. The data confirm that dysphagia is a common problem among head and neck cancer patients. Furthermore, they indicate that one year follow up may be insufficient to assess post-therapy dysphagia in studies of head and neck cancer.

P090 (COSM Poster #112)

THE IMPACT OF PTPN13 STATUS ON OUTCOMES FOR PATIENTS WITH OROPHARYNGEAL SQUAMOUS CELL CARCINOMA (OP-SCCA) TREATED WITH CONCURRENT CHEMORADIATION THERAPY. David C Shonka, Jr., MD, Aaron D Bossier, MD PhD, Cynthia S Gunsolly, BS, Nitin A Pagedar, MD, Lucy H Karnell, PhD, Gerry F Funk, MD; University of Iowa.

Objective: PTPN13 expression has been shown to be decreased in HPV associated tumors by inhibition through the E6 pathway. The objective of this study is to correlate HPV, PTPN13, and E6 status with outcomes in patients treated with CRT for OP-SCCA. Design: Analysis of prospectively collected specimens and correlation with prospectively provided functional and health-related quality of life information. Setting: Tertiary referral center. Subjects: 54 patients with OP-SCCA treated with CRT from February, 2000 through February, 2007. Intervention: Concurrent chemoradiation therapy (CRT). Main Outcome Measures: Quality of life measures, recurrence rate, and survival. Results: Tissue specimens from 54 patients with OP-SCCA were evaluated. All patients had advanced stage primary malignancies of the tonsil or base of tongue and were treated with concurrent chemoradiation therapy. Of the 54 OP tumors evaluated, 43 (80%) were positive for HPV by PCR. Additionally, 34 (63%) demonstrated low PTPN13 expression by immunohistochemistry. This correlated with HPV positivity in 50% of patients. The mean scores on health related quality of life measures were not significantly different between patients with low PTPN13 expression and those with high expression (p=0.3-0.9). There was no significant difference in five year observed survival between the two groups (p > 0.05) although patients with low PTPN13 expression had a lower rate of recurrence (20.6% vs. 35.0%). A significant increase in survival was noted for patients with HPV positive tumors compared to those with HPV negative tumors. Conclusions: These findings suggest that decreased PTPN13 expression does not predict improved survival in this subset of advanced stage OP-SCCA. Additional analysis of patients with less advanced disease at presentation may be warranted to further determine the prognostic significance of this tumor marker.
scar and have radiation related intestinal damage, which may increase
anastomotic complications. Impaired wound healing, manifesting as
pharyngocutaneous fistula, continues to be a common complication
in the irradiated neck. The radial forearm free flap, which can easily be
tailored in size and has a reliable pedicle with several venous options,
seems to provide the best tissue for reconstruction in this setting.

P092 (COSM Poster #114)
RISK FACTORS OF FREE FLAP COMPROMISE IN 247 CASES OF
MICROVASCULAR HEAD AND NECK RECONSTRUCTION: A SINGLE
SURGEON'S EXPERIENCE
Min-Sik Kim, MD PhD, Young-Hoon Joo, MD, Kwang-Jae Cho, MD PhD, Jun-Ook Park, MD; The Catholic University of Korea.

Background: The aim of this study was to evaluate relationships
between free flap compromise and perioperative risk factors. Methods: A retrospective review was conducted of 237 patients who underwent
247 microvascular free flap reconstructions after head and neck ablative surgery. Results: Twenty-one (8.5%) cases of free flap compromise
due to a vascular obstruction were identified, and 11 flaps were lost (4.5%); an overall success rate of 95.5%. A significant correlation
was found between diabetes mellitus and free flap compromise (p=0.048). Preoperative irradiation was also found to influence free flap
compromise, but with borderline significance (p=0.052). However,
multivariate analysis revealed a significant association between free flap
compromise and diabetes mellitus (odds ratio = 4.5 (95% CI, 1.1 to 22.8,
p=0.041)). Conclusions: Diabetes mellitus was found to be a risk factor
of free flap. The presence of diabetes mellitus may require more attention
to improve patient management and free flap outcomes.

P093 (COSM Poster #115)
The factors in prediction of fistula following radial
forearm free flap reconstruction for head and neck cancer
Min-Sik Kim, MD PhD, Young-Hoon Joo, MD, Kwang-Jae Cho, MD PhD, Jun-Ook Park, MD; The Catholic University of Korea.

Objectives: To evaluate the relationship between postoperative fistula and perioperative risk factors after radial forearm free flap (RFFF)
reconstruction for head and neck cancer. Study Design: Retrospective cohort study. Methods: A total of 180 patients underwent RFFF
reconstruction after head and neck ablative surgery from October 1993
to July 2009. Age, gender, systemic disease, smoking status, tumor
stage, preoperative radiotherapy, reconstruction site, concurrent neck
dissection, flap shape and size, and partial or complete flap necrosis
were recorded as the prognostic variables. Results: Twenty-one (11.7%) of the 180 patients developed fistula. Significant correlations were found between diabetes mellitus (p=0.015), preoperative radiotherapy (p=0.029) and fistula. Reconstruction of the
hypopharynx influenced fistula with borderline significance (p=0.057).
The multivariate analysis showed a significant association of the fistula with diabetes mellitus (odds ratio = 5.4 (95% CI, 1.0-27.6)) and preoperative radiotherapy (odds ratio = 5.9 (95% CI, 1.1-32.6)). Spontaneous closure was noted in 10 patients, whereas a surgical
closure with a local flap or pectoralis major myocutaneous flap was
recorded as the prognostic variables. Conclusions: Diabetes mellitus, preoperative radiotherapy were risk factors for fistula in patients undergoing RFFF reconstruction for head and neck cancer.

P094 (COSM Poster #116)
Partial and circumferential pharyngoesophageal
reconstruction using supraclavicular artery island flap
Ernest S Chiu, MD, Paul L Friedlander, MD; Tulane University Health Sciences Center.

Purpose: Pharyngoesophageal oncologic resections produce complex
reconstructive problems requiring reliable, robust flaps in order to
restore function. The goals of pharyngoesophageal reconstruction are
to allow quick recovery, restore swallowing/speech, and withstand
chemoradiation therapy. Both regional (deltotrapezial, parotid, trapezius) and free (jejunum, forearm, anterolateral thigh, ileocolon) flaps
have been successfully used to reconstruct these complex defects.
In this study, we report the utility of the supraclavicular artery island
(SAI) flap, a new regional fasciocutaneous flap option, in reconstructing
partial and circumferential pharyngeal defects. Methods: Partial and
circumferential pharyngeal oncological defects were reconstructed
with pedicled SAI flaps. Complications and functional outcomes were
assessed. Results: Over a three year period (2006-2009), twenty
(n=20) patients underwent oncologic pharyngeal (partial or complete
circumferential) reconstruction using the SAI flap. The majority of
patients (18/20) had previous failed chemoradiation therapy. Patients
ranged from 38 to 80 years (average 68.3 years). The flaps ranged
in size from 6X18 to 8X21 cm. All flaps were harvested in less than 1
hour; there were no flap losses. All donor sites were closed primarily
and did not require surgical revision. Shoulder function abnormality
was not observed. Early complications observed included one patient
who developed shoulder wound dehiscence followed by cellulitis did
not require surgical intervention. Interestingly, 4/20 (20%) patients
noted referred sensation to the shoulder when swallowing food.
6/20 (30%) patients developed early pharyngeal leaks, but all cases
resolved on their own. 16/20 (80%) patients were able to perform
PO intake after 3 months. Anastomotic strictures were noted in 2/20
(10%), and were successfully treated with balloonized dilatation by a
gastroenterologist. Electrolaryngeal speech could be performed by all
patients. Trans-esophageal puncture was also offered to all patients,
and successfully surgically performed by puncturing the SAI flap with
minimal complications. TEP speech was superior to electrolaryngeal
speech as judged by patients and independent observers. Conclusion:
Supraclavicular artery island flap is a safe, reliable, easy-to-harvest,
low morbidity, one-stage, sensate, fasciocutaneous regional flap option
for reconstructing partial and circumferential pharyngoesophageal
defects. Our early experience suggests that complications and functional
outcomes are similar to other reported regional and free tissue transfer
pharyngoesophageal reconstruction techniques. Additional technique-
based comparative studies may be warranted.

P095 (COSM Poster #117)
A new option in head and neck reconstruction: the free supraclavicular transverse cervical artery perforator (STCAP) flap
Cesare Piazza, MD, Johnny Cappiello, MD, Francesca Del Bon, MD, Stefano Mangilli, MD, Piero Nicolai, MD; Department of Otorhinolaryngology - Head and Neck Surgery, University of Brescia, Italy.

Introduction: The free STCAP flap has been recently introduced as an
innovative option for facial and oral reconstruction. Cadaveric studies
have demonstrated its vascular anatomy as based on perforators
coming from the transverse cervical artery (TCA) vascularizing the skin
of the posterior triangle of the neck. By contrast, its drainage is through
the superficial cervical and external jugular (EJV) veins. The main
attractive of this flap is represented by its easy access for head and neck
surgeons, fast harvesting, and very low donor site morbidity. Purpose
of the Study: To describe harvesting technique, complication rate, and
functional outcomes of this flap. Material and Methods: Between
December 2007 and October 2008, we applied the free STCAP flap for
reconstruction of 6 head and neck cancer patients (4 males, 2 females;
age range, 51-75 years): 4 oral cavities (3 floor of the mouth and 1 hemi-
mobile tongue) and 2 external ears and skin of the parotid region.
None of them had been previously treated by radiotherapy (RT) and all were
cNO. Results: Flap harvesting mean time was 40 minutes. Mean size
of the skin paddle was 6 x 8 cm and every neck donor site was closed
primarily. Mean length of pedicle was 8 cm (vessels caliber of 2 mm
for TCA and 5 mm for EJV). One patient developed an oral fistula managed
by primary suture under local anesthesia. No flap failure occurred. Scar
on the lower part of the neck always resulted inconspicuous 2 months
after surgery. Conclusions: Texture and pliability of this flap render it an
ideal reconstructive option for middle-sized soft tissues oral and facial
defects. Essential prerequisites are no previous neck dissection of level
III-V or RT. Another potential limit can be represented by the need for
relatively close recipient vessels due to the short pedicle. In the hands of
experienced head and neck surgeons, STCAP flap represents an
expeditious, reliable, and safe procedure. No donor site morbidity has
been observed.
P096 (COSM Poster #118)
SENSORY RECOVERY OF NONINNERVATED FREE RADIAL FOREARM FLAP IN LOWER ORAL CAVITY RECONSTRUCTION AND ITS INFLUENCE ON ORAL FUNCTION: LONGITUDINAL ASSESSMENT OF TWENTY-FIVE PATIENTS. Mohamed A Elbiban, John Devine, Taimur Shoaib, Geremy McMahon, Stephen Morley, David Soutar; Canniesburn Plastic Surgery Unit, Glasgow Royal Infirmary, Glasgow, United Kingdom.

Introduction: Sensory recovery of noninnervated free radial forearm flap is uncommon, unpredictable and variable. The aim of the present study was to address sensory recovery of free radial forearm flap used for lower oral cavity reconstruction and its influence on oral function.

Subjects and Methods: A total of 25 patients who underwent lower oral reconstruction with noninnervated free radial forearm were studied for one year postoperatively. The sensory modalities examined were pin prick, light touch, hot and cold temperature and static two-point discrimination. Oral function was assessed using Functional Intraoral Glasgow Scale (`Functional Intraoral Glasgow Scale\'\' and `University of Washington Health Related Quality of Life questionnaire\'\'Patients were assessed preoperatively, two months, six months and one year postoperatively. Results: Our results showed gradual improvement of sensory recovery during the postoperative period up to one year except light touch. Five (20%) patients had complete sensory recovery and 13(52%) patients didn’t achieve any recovery at one year. Partial recovery was recorded in seven(28%) patients. Patients with complete sensory recovery recorded the best functional scores as compared to patients with insensate flaps. Conclusions: There was a positive correlation between sensory recovery of free radial forearm flap and oral function. Therefore, the use of innervated free radial forearm flap is highly recommended for better oral function.

P097 (COSM Poster #119)
RECONSTRUCTIVE OPTIONS FOR THE LATERAL TEMPORAL BONE DEFECT. Alicia M Quenel, MD, Vasu Divi, MD, Derrick Lin, MD; Massachusetts Eye and Ear Infirmary.

Purpose: To compare the clinical outcomes of reconstructive procedures used for obliteration and coverage of the defect from lateral temporal bone resection. To develop a framework for selecting the best suited reconstructive procedure, ranging from free fat grafts to pedicled flaps to free tissue transfer, for the lateral temporal bone defect. Methods: Retrospective case review of patients undergoing a reconstructive procedure after lateral temporal bone resection and/or auriculotomy between January, 1989 and November, 2009. Patient and operative variables included age, medical comorbidities, extent of cutaneous, parotid, and/or auricular resection, length of hospital stay, use of preoperative and/or postoperative radiotherapy, pathologic diagnosis. Clinical outcomes included major wound complications, minor wound complications, donor site complications, medical complications, number and types of revision surgeries. Results: There were 46 patients who underwent lateral temporal bone resections requiring 50 reconstructive procedures during the stated period. Types of reconstruction included abdominal fat obliteration only (20), temporoparietal fascial flap (7), occipital flap (1), pectoralis major flap (9), anterolateral thigh free flap (7), rectus abdominus free flap (1), radial forearm free flap (3), and latissimus dorsi free flap (2). The length of hospital stay ranged from 2 to 12 days, with an average of 2 days for patients undergoing abdominal fat obliteration as the only reconstruction, an average of 6 days for patients undergoing pedicled tissue transfer, and an average of 8 days for patients undergoing free tissue transfer. Major wound complications occurred in 1 patients. Minor wound complications occurred 4 patients, and donor site wound complications occurred in 3 patients. Conclusions: For patients undergoing lateral temporal bone resection with or without parotidectomy and auriculotomy, there are multiple options for reconstruction. We present our algorithm for selecting the reconstructive procedure based on patient characteristics, defect, and expected complication rates.

P098 (COSM Poster #120)
FACTORS CONTRIBUTING TO RECURRENCE AFTER RESECTION OF ANTERIOR SKULL BASE MALIGNANCIES: A SINGLE-INSTITUTION REPORT. Marc A Cohen, MD, Jason M Leibowltz, MD, Evan R Ransom, MD, Alexander G Chiu, James N Palmer, MD, M S Grady, MD, John YK Lee, MD, Bert W O’Malley Jr, MD, Jason G Newman; University of Pennsylvania Medical Center.

Introduction: Since the introduction of primary surgery for tumors of the anterior skull base 50 years ago, the outcomes for those undergoing treatment for these lesions have improved. These improvements have been as a result of the formation of more experienced multidisciplinary teams of clinicians, as well as the advancement of technique and surgical tools, such as the endoscope. Despite advances, a large percentage of patients with lesions of the anterior cranial base continue to experience disease recurrence. We evaluated 90 patients treated primarily with endoscopic, open, or combined approaches for anterior skull base malignancies to assess for factors correlated with tumor recurrence. Methods: We conducted a review of 90 patients undergoing surgical treatment for malignancies involving the anterior cranial base from November 2000 to November 2008. All clinical data was obtained retrospectively, with margin status assessed per final pathology and recurrences based on the presence of disease up to the last follow up. The mean age was 56.9. Mean follow up was 20.0 months. Most common tumor origin was maxillary sinus (23), followed by ethmoid sinus (25) and naso cavity (25). All tumor stages were included, with 61% (55) being stage IV lesions. There were 48 open procedures, 23 entirely endoscopic procedures, and 19 combined procedures. There were 37 total recurrences. Results: The rate of recurrence was 41.0%. Primary nasal cavity lesions had the significantly lowest rate of recurrence at 24.0% (p=0.04). Patients with positive margin status had a higher rate of recurrence at 56.4% than those with negative margins (p=0.01). There was also correlation of recurrence with both advanced disease and medical comorbidity (p=0.03 and p=0.03). When controlled for tumor stage, there were no differences in recurrence rates depending on the surgical modality modality used (open, endoscopic, or combined) (p=0.47). Conclusion: In our single institutional study, we have found anterior skull base malignancy recurrence correlates with positive margins, advanced disease, and medical comorbidity. However, the lack of association with chosen modality of therapy indicates that in the appropriate patient, a less morbid, endoscopic procedure may be performed, even in those with advanced disease. In the future, prospective studies should focus on evaluation of factors predisposing to anterior skull base malignancy recurrence.

P099 (COSM Poster #121)
A COMPLETELY TRANS-NASAL ROBOTIC APPROACH TO THE ANTERIOR SKULL BASE. Jason G Newman, MD, John Y Lee, MD, Greg S Weinstein, MD, M Sean Grady, MD, Brad C Lega, Bert W O’Malley; University of Pennsylvania.

Objective: To develop a new two surgeon (Otolaryngologist and Neurosurgeon) approach to the anterior skull base using a completely trans-nasal robotic surgery. Study Design: A total of 6 surgical procedures and approaches were performed on one live canine mongrel and four human cadavers. Methods: Experimental procedures were performed using a 2-surgeon, 4-handed technique in the dissection of live canine and cadaver models. All procedures were performed in an approved training facility using the da Vinci Surgical Robot. Previous experience with trans-oral robotic surgery (TORS) paved the way for our current studies, including the use of a bedside assistant who acts as co-surgeon. In the current set of experiments we teamed-up with our skull-base neurosurgeons to demonstrate that a 2-surgeon approach to these regions was feasible and beneficial (without cervical incisions). The anterior cranial base, from the planum sphenoidale to the frontal bone was dissected in the cadaver models and access to the intracranial and neurovascular space was achieved. The primary surgeon was at the robotic console while the secondary surgeon assisted at the bedside using the view achieved on the robotic monitor. Angles of approach and optimal positioning of the robotic arms were determined. Results: The two team approach, incorporating Otolaryngologist and Neurosurgeon, is feasible using trans-nasal robotic surgery to the skull base. Working
in concert, we were able to approach and dissect the anterior skull base with excellent visibility and access. We were able to maximize exposure and access to these regions without the need for cervical incisions.

Conclusions: A 2-team approach to the anterior skull base using robotic surgery was achieved in live canine and human cadaver models. We plan to continue our investigations into robotic surgery of the skull base, and believe that continued evolution of techniques and instrumentation will expand the indications for this surgery.

P100 (COSM Poster #122)
SURGICAL EXPERIENCE IN SECOND TUMOR OF THE HEAD AND NECK AFTER INITIAL TREATMENT OF RETINOBLASTOMA. Thomas Jouffroy, MD, Angélique Girod, MD, Hervé Boissonnet, MD, José Rodriguez, MD; Institut Curie.

Second tumor in irradiated field are a major cause of morbidity and mortality in patients who were previously treated for hereditary retinoblastoma. 42 cases treated at the Institut Curie between 1971 and 2006 were studied in a retrospective review. The median time interval between the diagnosis of retinoblastoma and second tumor was 18.2 years (range 3.8-38.2 years). Histopathological diagnoses included: 40 sarcomas, 1 carcinoma and 1 meningioma. The initial treatment for retinoblastoma was a conservative treatment (radiation therapy and chemotherapy alone) in 7 cases, and a non conservative treatment (with surgery) in 35 cases. The treatment of the second tumor was surgery in 28 cases always associated with chemotherapy except in the case of meningioma. 14 non operable cases were treated by chemotherapy or remission. 8 patients have been reoperated for local recurrence. Tumor locations were orbito-maxillary in 16 cases, base of skull or infra-temporal fossa in 15 cases and ethmoido-maxillary in 11 cases. Surgical resection was complete in 14 cases and necessitated both head and neck and neurosurgical approach in 17 cases. 15 free flaps were performed including 12 for tumor resection and 3 for cosmetic reconstruction. 18 patients are still alive with a median follow up of 8.8 years, 5 among them have residual disease. All other patients died with a median survival of 2.6 years. The cause of the death was local failure in 16 cases. This base of skull surgery in irradiated field can be done more frequently with the use of free flaps. The goal of the treatment is to include surgery when feasible. All patients still alive without known residual disease are those who have been operated with complete microscopic resection or those who had complete response after chemotherapy.

P101 (COSM Poster #123)
INTERNAL CAROTID ARTERY (ICA) CONTROL FOR THE SAFE RESECTION OF EXTRACRANIAL SKULL BASE TUMORS. John P Leonetti, MD, Sam J Marzo, MD, Chad A Zender, MD, James J Jaber, MD; Department of Otolaryngology - Head and Neck Surgery, Loyola University Medical Center.

Objective: The main goal of this investigation is to outline three surgical methods for the exposure and control of the ICA in patients with large tumors of the infratemporal fossa and parapharyngeal space. Study Design: Retrospective case review. Setting: Tertiary care, academic medical center. Patients: All patients with tumors of the skull base requiring additional superior ICA exposure prior to definitive resection of the lesion. Intervention: The transparotid-transstyloid, transmastoid or subtemporal petrosectomy techniques were chosen according to the intraoperative assessment of the superior tumor extension. Main Outcome Measure: The surgical team’s ability to expose and control the ICA prior to inferior tumor dissection, thus reducing the risk of inadvertent arterial injury. Results: Of the 119 patients reviewed there were 69 females and 50 males with a mean age of 53.1 years. The most commonly encountered tumors were schwannomas, paragangliomas, and parotid tumors. The transparotid-transstyloid technique was used in 23 cases, the transmastoid method in 60 individuals, and the remaining 36 patients underwent a subtemporal petrosectomy. Total tumor resection was achieved in 106 of 119 patients (89%) and no patients developed carotid artery related complications. Conclusions: Contemporary lateral skull base techniques should be utilized for the exposure and control of the ICA in patients undergoing the surgical resection of large tumors of the infratemporal fossa and parapharyngeal space.

P102 (COSM Poster #124)
CLASSIFICATION OF APPROACHES FOR ENDONASAL ENDOSCOPIC RESECTION OF INFRATEMPORAL FOSSA TUMORS. Stephen A Whelless, BS, Anand V Germanwala, MD, Carl H Snyderman, MD, Ricardo L Carrau, MD, Adam M Zaranton, MD; University of North Carolina Hospitals, University of Pittsburgh Hospitals.

Background Objectives: Tumors of the infratemporal fossa have routinely been approached via a transcervical approach, a transparotid approach, or a larger transcranial transzygomatic approach. These approaches have the advantage of excellent exposure, but have the disadvantage of placing the superficial facial nerve, parotid, and the cosmetically sensitive structures of the gyromatic arch and orbital rim at risk. All of these approaches also require a cosmetically sensitive skin incision. As expanded endoscopic infratemporal skull base surgery has advanced, more complex tumors and more complex locations have begun to be approached. The transparotid approach was increasingly utilized for the exposure and control of the ICA in patients undergoing (89%) and no patients developed carotid artery related complications.

Results: Main Outcome Measure: tumor extension. Patients: Tertiary Setting: Retrospective case review. Study Design: The treatment of extracranial skull base tumors often requiring multimodality therapy. Sarcomas account for the majority of pediatric sinonasal malignancies, and a shift has occurred towards nonsurgical management of these malignancies with improved outcomes compared to historical data. Surgery remains the mainstay of treatment for sinonasal carcinomas and other nonsarcomatosus tumors.

P103 (COSM Poster #125)
THE MANAGEMENT OF SINONASAL MALIGNANCIES IN THE PEDIATRIC POPULATION. Jose P Zevallos, MD, Nicholas B Levine, MD, Franco DeMona, MD, Dianna B Roberts, PhD, Ehab Y Hanna, MD, Michael E Kupferman, MD Department of Head and Neck Surgery, Department of Neurosurgery, University of Texas; MD Anderson Cancer Center, Houston, TX, Bobby R Alford Department of Otolaryngology/Head and Neck Surgery, Baylor College of Medicine, Houston, TX.

Introduction: Sinonasal malignancies in children are rare, histologically diverse, and aggressive tumors. The treatment of sinonasal malignancies is challenging and often associated with complications and long-term sequelae. The purpose of this study is to review the experience of a single cancer center in the management of pediatric sinonasal malignancies. Methods: A ten-year retrospective review was conducted of pediatric patients with sinonasal malignancies treated at a single institution. The diagnosis, treatment, and outcomes were reviewed. Results: 44 patients were identified. The median age was 12 years (range 2-17), and 38% were female. Thirty-three patients presented with sinonasal sarcomas (75% rhabdomyosarcoma), 8 with carcinomas (4 squamous cell, 1 adenoid cystic, 1 adenocarcinoma, 1 carcinoma ex pleomorphic), and 3 esthesioneuroblastomas. The majority (47%) of patients with sarcomas were treated with chemoradiation alone. Ninety-five percent of patients with nonsarcomatosus malignancies were treated surgically with 50% undergoing postoperative radiotherapy. The five-year recurrence rate (RR), disease-specific survival (DSS), and overall survival (OS) for the entire group was 43%, 81%, and 71%, respectively. In the sarcoma group, RR was 51%, DSS 79%, and OS 71%. In the carcinoma group, RR was 25%, DSS 88%, and OS 100%. Conclusions: Pediatric sinonasal malignancies are rare, aggressive tumors often requiring multimodality therapy. Sarcomas account for the majority of pediatric sinonasal malignancies, and a shift has occurred towards nonsurgical management of these malignancies with improved outcomes compared to historical data. Surgery remains the mainstay of treatment for sinonasal carcinomas and other nonsarcomatosus tumors.
in children. The risks of surgical resection in the sinonasal region and skull base, as well as long-term effects of radiation therapy in this region, are important considerations when treating children with sinonasal malignancies.

P104 (COSM Poster #126)  
**HEPARIN-BINDING EGFR-LIKE GROWTH FACTOR AND ITS REGULATOR, MIR-212, ARE ASSOCIATED WITH ACQUIRED CETUXIMAB RESISTANCE IN HEAD AND NECK SQUAMOUS CELL CARCINOMA.** Hirotsu Hatakeyama, MD PhD, Yan Gao, Robbert J Stebos, PhD, Deric L Wheeler, PhD, Paul M Harari, MD, Wendell G Yarbrough, MD, Christine H Chung, MD; Vanderbilt University.

*Background:* We hypothesized that chronic inhibition of epidermal growth factor receptor (EGFR) by cetuximab, a monoclonal anti-EGFR antibody, induces up-regulation of its ligands resulting in resistance, and microRNAs (miRs) play an important role in the ligand regulation in head and neck squamous cell carcinoma (HNSCC).  

*Experimental Design:* Whole genome-wide changes in gene and miR expression were determined in cetuximab-sensitive cell line, SCC1, and its resistant derivative 1C8 using DNA microarrays and RT-PCR. The effects of differentially expressed EGFR ligands and miRs were examined by MTS assay, cell growth assay on matrigel, ELISA and western blots. Additional 33 cell lines examined for Heparin-binding EGFR-like growth factor (HB-EGF) and miR212 expression.  

*Results:* HB-EGF and its regulator, mir212, were differentially expressed with statistical significance when SCC1 and 1C8 were compared for gene and miR expression. Stimulation with HB-EGF induced cetuximab resistance in sensitive cell lines. Inhibition of HB-EGF and addition of miR-212 mimic induced cetuximab sensitivity in resistance cell lines. Akt activation was the dominant downstream pathway in 1C8 while MAPK activation was dominant in SCC1. mir-212 and HB-EGF expression were inversely correlated in 33 other cell lines. The average plasma HB-EGF levels in patients with recurrent tumors after treatment with chemo/radiation therapy was more than 5 times higher than those in patients with newly diagnosed tumors.  

*Conclusion:* Up-regulation of HB-EGF and down-regulation of miR-212 are one of the mechanisms of cetuximab resistance. Combination of EGFR ligand inhibitors or miR modulators with cetuximab may improve the clinical outcomes of cetuximab therapy in HNSCC.

P105 (COSM Poster #127)  
**QUALITY OF LIFE ASSESSMENT IN PATIENTS WITH RECURRENT WELL-DIFFERENTIATED THYROID CANCER TREATED WITH EXTERNAL-BEAM RADIATION THERAPY.** Michele Stover, MD, Thomas J Gal, MD MPH, Mahesh Kudrimoti, MBBS MD, Joseph Valentino, MD; University of Kentucky Chandler Medical Center.

*Objectives/Hypothesis:* The objective is to examine the effect of the addition of external beam radiotherapy (XRT) on quality of life (QOL) in patients with recurrent well-differentiated thyroid cancer (WDTC). The hypothesis is that an appreciable decrease in QOL will be observed in comparison to patients treated with thyroidectomy alone or thyroidectomy plus radioactive iodine (RAI).  

*Study Design:* Cross-sectional analysis using validated QOL instruments.  

*Methods:* Patients who received XRT between 1992 and 2004 for recurrent WDTC at the University of Kentucky Department of Radiation Oncology were identified and offered study participation. Control groups for comparison, based on appropriate sample size calculations, consisted of patients treated with total thyroidectomy with postoperative RAI for WDTC, or total thyroidectomy alone. The Quality of Life Radiation Therapy Instrument (QOL-RTI) and the Head and Neck (HN) companion module were administered retrospectively. Parametric (ANOVA), non-parametric (Kruskal Wallis), and multivariate logistic regression analysis were used to examine differences across groups.  

*Results:* Of the 36 patients identified as receiving XRT for WDTC, 13 agreed to participate. No significant differences were observed for overall QOL across all three groups. Overall QOL was reported as 8 out of 10 for all groups. Statistically significant decreases in QOL were observed in the XRT group for appearance, skin discomfort, as well as embarrassment eating in public when compared to patients treated with postoperative RAI (N=11) or thyroidectomy alone (N=10). A significant, incremental impairment in the ability to swallow solids was observed in both the XRT and postoperative RAI groups when compared to thyroidectomy alone, corresponding to a significant difference in mucous viscosity.  

*Conclusions:* The addition of XRT to the therapy regime for WDTC does not appear to negatively impact the overall QOL. However, XRT does appear to result in decreases in swallowing and appearance related parameters. While treatment with RAI does result in a measurable difference in swallowing related QOL when compared to surgery alone, an even greater impact is observed with the addition of external beam radiotherapy.

P106 (COSM Poster #128)  
**MINIMALLY INVASIVE VIDEO ASSISTED THYROIDECTOMY: EXPANDED INDICATIONS.** Allyn J Kim, MD, Jeffrey C Liu, MD, Ian Ganly, MD, Dennis Kraus, MD; Memorial-Sloan Kettering Cancer Center.

*Background:* Minimally invasive video assisted thyroidectomy (MIVAT) provides a less invasive means for performing thyroidectomy with the benefit of a smaller incision, less extensive surgical field, and potentially decreased postoperative pain. As with any new technique, the indications for its application have been conservative while its safety and efficacy are being evaluated. Our goal was to report our experience with MIVAT and expanded indications for its application.  

*Study Design:* A retrospective chart review of a single surgeon's initial experience with MIVAT.  

*Setting:* Tertiary academic medical center.  

*Results:* 54 patients were identified, 40 underwent total thyroidectomy and 14 underwent hemithyroidectomy. 43 (80%) were women with an overall average age of 51 years. Average BMI was 27, including 9 obese patients. Average thyroid volume on preoperative ultrasound was 33 cm^3^.

Nodule size ranged from 0.9 to 5.4 cm with an average nodule size of 3.2 cm. Previous anterior cervical dissection was not a contraindication to minimally invasive technique. Incision length averaged 3.9 cm. Surgical time averaged 140 minutes. Eight cases (14.8%) necessitated an increased surgical incision but MIVAT technique continued to be employed in this setting. Parathyroid reimplantations were performed in three patients. Average hospital stay was 1.4 days. The average follow-up was 3 months post-op. The most common finding on pathology was well-differentiated papillary thyroid cancer (68.9%) followed by benign hurthle lesions and goiter (9.3% each). Benign follicular and follicular lesions were 7.4% and 1.9%, respectively and there was one patient with poorly differentiated cancer (1.9%). Forty-one percent of patients had evidence of thyroiditis. The most common complication was temporary vocal cord paralysis (17%) with only one case of vocal cord paralysis persisting greater than 6 months (1.9%). Eight patients (15%) experienced temporary hypocalcemia requiring postoperative calcium supplementation and no patients experienced permanent hypocalcemia. Eleven patients received postoperative radioactive iodine as part of management for their thyroid malignancy. On limited follow-up, there were no cases of recurrence.  

*Conclusions:* The use of MIVAT compared with traditional open thyroidectomy show comparable rates of permanent hypocalcemia and vocal cord injury. The preliminary results of this study show the safety of MIVAT with expanded indications and add further support for its safety and adaptability. As with any new surgical procedure, a learning curve exists and improved efficiency should occur over time. The authors will highlight common pitfalls of their early surgical experience.
can be variable especially with a non-recurrent laryngeal nerve. A less commonly described technique is to identify the RLN as it enters the larynx, which is more constant. In the case series described below in all cases the RLN was identified as it entered the larynx and followed distally only as far as required to enable the gland to be dissected free. This represents a large series of patients undergoing identical operative technique by a single surgeon. **Aim:** The primary aim of the study was to investigate the rate of recurrent laryngeal nerve damage in a single surgeon series of thyroid surgery. **Material and Method:** The senior author (IMB) maintains a prospective database of patients undergoing thyroid surgery for benign and malignant conditions between July 2007 and December 2009. In all cases the RLN was identified as described above. All patients underwent post-operative vocal cord assessment. **Results:** 121 procedures were undertaken: Age: Mean Age at operation 51 years (range 17-90). Gender: Female 101 (83.5%); Male 20 (16.5%). Procedure: Hemi-thyroidectomy 65 (53.7%); Total Thyroidectomy 35 (29.0%); Total Thyroidectomy 20 (16.5%); Isthmusectomy 1 (0.8%). Recurrent Laryngeal Nerves at Risk: 140. Recurrent laryngeal Nerve Palsy: Permanent 2 (1.4%); Temporary 2 (1.4%). Permanent 0. **Discussion:** The analysed data confirms that this is a safe method to identify and preserve the RLN. The temporary palsy rate of 1.4% compares very favourably to other published studies. The permanent palsy rate of 0% highlights the effectiveness of the technique. The identification of the nerve at a constant anatomical landmark minimises inadvertent damage and minimises problems caused by known anatomical variations in the cervical course of the RLN. Minimising the exposure of the nerve which is possible in this technique minimises the risk of devascularisation of the RLN and inadvertent damage to the nerve as it is being exposed. **Conclusion:** Identification of the RLN at its consistent entry point into the larynx is a safe and effective technique to prevent RLN palsy. We recommend that surgeons undertaking thyroid surgery are aware and practiced in this technique.

**P109 (COSM Poster #131)**

**THE MANAGEMENT OF THE CENTRAL NECK IN FOLLICULAR VARIANT OF PAPILLARY THYROID CANCER.** Sachin Gupta, MD, Daisuke Nonaka, MD, Keith Heller, MD, Kapel N Patel, MD; Department of Otolaryngology, Department of Pathology, Department of Surgery, New York University Langone Medical Center.

**Background:** Prophylactic central-compartment neck dissection (CCND) for differentiated thyroid cancer (DTC) is controversial. The revised 2009 ATA Guidelines recommend that prophylactic CCND (papillary or bilateral) may be performed in patients with papillary thyroid carcinoma (PTC) with clinically uninvolved central neck lymph nodes, especially for advanced primary tumors (T3 or T4). The recommendation however does not make a distinction between classical PTC and follicular variant of PTC (FVPTC). The aim of this study was to evaluate central nodal metastasis in patients with FVPTC. This will allow for a better understanding of the natural history of this disease and help delineate the role of CCND for FVPTC.

**Methods:** A retrospective chart review of 352 patients undergoing initial surgery for DTC from 1/1/07 – 11/10/09 was performed. 75 patients with FVPTC were identified. From this group, 33 patients with pathological central compartment lymph node data were included in the study. Pathology was reviewed for size, the presence of encapsulation, extrathyroidal extension, lymphovascular invasion and extranodal disease. **Results:** Encapsulated FVPTC (EFVPTC) was found in 14 patients (42%). The mean tumor size was 22.9 mm with 0% (0/36) positive central lymph nodes. Non-encapsulated follicular variant of papillary thyroid carcinoma (NF-FVPTC) was found in 19 patients (58%). The mean tumor size was 17.5 mm with 22% (19/88) positive central lymph nodes. However, in this group all of the positive central lymph nodes were found in 2 patients who pre-operatively had clinical and radiographic evidence of central and lateral neck lymph node involvement. In the remaining 17 patients with NF-FVPTC, with no clinical or radiographic evidence of central lymph node involvement, there were no (0/55) positive central compartment lymph nodes. **Conclusion:** As prophylactic central-compartment neck dissection becomes an option for patients with PTC, it is important to identify patients unlikely to have metastatic central nodal disease. This study shows that unlike classical PTC, FVPTC rarely metasizes to the central-compartment lymph nodes.

**Objective:** To determine the best timing for the sample and cut-off point in the decrease of parathyroid hormone (PTH) levels in order to predict the development of post-thyroidectomy hypocalcemia. **Material and Method:** A consecutive group of patients undergoing total thyroidectomy at our department since February until November 2009. Patients with any condition that could interfere with calcium homeostasis were excluded from the survey. Thus, 73 patients were considered for analysis. PTH and serum calcium levels were determined preoperatively, immediately after surgery and a number of hours after surgery (delayed PTH levels: at 8 p.m. if patient underwent surgery in the morning, or at 8 a.m. if patient underwent surgery the previous afternoon or evening). **Results:** Mean stay at hospital was 4.1 days, ranging from 3 to 10 days. Treatment for hypocalcemia was required in 13.7% of patients. A decrease higher
PARATHYROID GLANDS DYE WITH METHYLEN BLUE TO PREVENT HYPOCALCEMIA AFTER TOTAL THYROIDECTOMY: PROSPECTIVE RANDOMIZED STUDY. Matias Lavin, MD, Nicolas Avalos, MD, Luis Marin, MD, David Cohn, MD, Jorge Plasser, MD, Gerardo Mordojovich, MD; Fundacion Arturo Lopez Perez. Hypoparathyroidism is the most frequent complication after total thyroidectomy. To prevent this complication some authors use methylene blue for parathyroid gland dyeing, trying to increase the rate of parathyroid gland detection. There is a lake in the literature regarding the real utility of methylene blue to identify parathyroid gland and prevent postoperative hypocalcemia. The aim of our study is to demonstrate the real capacity of methylene blue parathyroid gland dye to prevent clinical hypocalcemia after total thyroidectomy. In this prospective randomized study, we enroll 30 patients selected to total thyroidectomy. Exclusion criteria were renal failure, heart failure, non-controlled hypertension, selective serotonin reuptake inhibitors drugs use and hyperparathyroidism. We randomized 15 patients in control group and 15 patients in methylene blue group. Three head and neck surgeons with the same operative technique operated all the patients. In the dye group, the protocol was 5 mg/kg weight intravenous infusion with anesthesia induction. Plasmatic level of iPTH was measured preoperative and 6 hours post operative. Clinical hypocalcemia, number of parathyroid gland identified, number of parathyroid gland dye blue, number of autotransplanted glands were recorded. We used statistic software STATA 10.1 for analysis. We studied 29 patients. Fourteen patients in the methylene blue group and 15 patients in the control group. The demographic data between groups were similar. The iPTH post surgery was 34.28 ± 27.43 in control group and 40.82 ± 29.56 in the methylene blue group (p=0.22). The number of parathyroid glands identified by group were 2.66 ± 0.97 and 2 ± 0.12 (p=0.19). In the control postoperative iPTH below normal value in control group and 21.43% in the methylene blue group. But clinical hypocalcemia were 13.33% and 7.1% (p=1). The number of parathyroid gland autotransplantation were 6.67% in control group and 14.29% in the methylene blue group. In the methylene group we had a great number of complications (50%), principally migraine, dizziness, hypertension crisis and persistent nausea. Two patients had prolonged hospital stay because complications. We concluded that methylene blue does not add better parathyroid gland identification and does not diminish post thyroidectomy hypocalcemia rate. Additionally methylene blue had a high rate of complications, so we don't recommend using it.

IS LEVEL VI NECK DISSECTION NEEDED IN ALL CASES THYROID DIFFERENTIATED CARCINOMA METASTATIC TO THE NECK? Roberto A Lima, MD PhD, Ullyanov B Toscano, MD, Fernando L Dias, MD PhD, Jacob Kligerman, MD, Mauro M Barbosa, MD, Jose R Soares, MD, Emilson Q Freitas, MD; Department of Head and Neck Surgery of the Brazilian National Cancer Institute, Rio de Janeiro. Background: In the treatment of well-differentiated thyroid cancer (WTC), supplementary lymph node dissection (LND) is not well standardized. Histologic and routine we have noticed that metastatic lymph nodes (LND) has been treated with therapeutic neck dissection. Total resection of the metastatic disease depends on the neck levels dissected with an en bloc resection. The significance of metastatic nodes with respect to regional recurrence and overall survival remains controversial. Decisions regarding the extent of lymphadenectomy that is necessary for the treatment of regional metastasis from WTC should be made based on predictable drainage patterns. Objectives: The aim of the study was to show the efficacy of neck dissection in initial treatment of WTC and metastatic recurrence. Study Design: Retrospective chart review of patients with WTC treated at the Brazilian National Cancer Institute/ INCA. Patients and Methods: From 1993 to 2002, 512 charts of WTC were reviewed. One hundred twenty seven patients (24.8%) were treated primarily with thyroidectomy plus neck dissection (ND), patients that developed neck metastases after initial treatment were excluded (42 patients). Eight-five patients with initial clinical presentation of WTC and neck nodes were included in this study. Patient characteristics (age and gender), tumor factors (pathology, size of tumor, multifocality) and extent of neck dissection, related to neck recurrences were analyzed using the chi-square method. The overall survival was estimated by the Kaplan–Meier method. Results: The most frequent histology was papillary thyroid carcinoma, in 81 cases (95.3%). The mean age was 44 years old. Sixty-nine (81.2%) patients were women. Thirty-eight patients underwent to a selective neck dissection (SNND) (level II-V), 29 patients SNND (level II-VI), 14 patients central compartment ND, and 4 patients radical neck dissection (RND). Thirty-five patients (41.2%) had neck nodes metastasis in central and lateral compartments. Thirty-two
with invasive disease however this goal must be balanced with the morbidity associated with resection. Mucosal sparing conservative shave procedures and partial resections have been described with laryngeal invasion, but given its rarity management remains controversial. We present five patients who were diagnosed with WDTC and laryngeal invasion who required total laryngectomy (TL) procedures; we present the clinical history and our management strategy in each case. **Design:** Retrospective chart review (1998-2008). **Setting:** Tertiary academic referral center. **Patients:** Five adult patients presenting with WDTC and laryngeal invasion requiring TL procedures. **Interventions:** TL +/- soft tissue resection and adjuvant therapies. **Main Outcome Measure(s):** Presenting symptoms, management strategy, disease free and overall patient survival. **Results:** Five patients (4 males; mean age 74 years) underwent TL procedures for the management of multiply recurrent invasive WDTC (2 Hürthle cell; 2 papillary; 1 follicular thyroid carcinoma) over the last decade at our department. Prior to TL, each patient underwent on average 2.2 surgical procedures and at least on course of radioactive iodine or external beam radiation. The average length of follow-up after TL was 3.5 years; 2 deaths occurred following disease free interval (mean 1.2 years). Of the patients, 24.7% had complications after surgery. Sixteen patients (37.6%) patients had neck nodes metastasis only lateral compartment and 18 (21.2%) patients only in central compartment. Twenty-one (24.7%) patients had complications after surgery. Sixteen patients (18.8%) had recurrences, 3 local and 13 neck lymph nodes recurrences. All patients were salvaged by surgery, none patients died from thyroid cancer. Ten patients (24.4%) with extra thyroid spread and 13 patients with vascular invasion (23.6%) had neck nodes recurrences, p=0.025 and p=0.004, respectively. Patients who underwent to a SND (II-IV) and central ND had recurrences in neck nodes, 26.3% and 21.4%, respectively. (p=0.02) None patient who underwent to a SND (II-IV) or RND had neck nodes 7.2% recurrences. The mean time of follow-up was 84 months. The 10-year overall survival was 94%. **Conclusion:** Vascular invasion and extra thyroidal disease influenced the occurrence of neck recurrences. The extent of neck dissection influenced the incidence of neck nodes recurrences. Our data suggests that less than SND (levels II to VI) increase the occurrence of neck nodes recurrences.

**P114 (COSM Poster #136)**

**THYROID CANCER TREATMENT CONCERNS ABOUT COST.** Glaucia R Roque, Pharm D, Joao G Filho, MD PhD, Luiz P Kowalski, MD PhD; A C Camargo Hospital.

**Objective:** To evaluate the cost of treatment of patients with thyroid carcinoma in its first year of treatment, considering its pretreatment, treatment and follow-up period. **Patients and Methods:** A retrospective cohort study was performed using a prospectively maintained database of treatment costs of 115 patients with thyroid carcinoma treated in the period from July 1, 2007 to June 30, 2008, at a tertiary cancer hospital in a developing country. The cost analysis data were obtained from the computerized database stored in prospective format, related to the number of procedures in a detailed, individualized form (consultations, surgery, anesthesiologist, outpatient nursing care), complementary exams (laboratory and imaging), adjuvant therapy and treatment of complications that occurred in the study period. All the patients were classified according to the American Society of Anesthesiologists (ASA) in the preanesthesia evaluation and according to the presence of comorbidity, using the adult comorbidity evaluation index (ACE-27). The treatment period comprised costs about surgical treatment of the thyroid carcinoma until the end of adjuvant treatment when indicated or thirty days after surgery when who did not have it performed. **Results:** The total cost of treatment in the first year ranged from US$ 2,804 to US$ 17,554 with an average of US$ 6,683 per patient. The pretreatment period corresponded only 5.8% of total costs with treatment. In this period the costs of imaging exams accounted for 68% of the total expenditure. Whereas, the treatment period accounted for the highest cost, corresponding to 87% of the total expenditure. The follow-up period accounted for 7.2% of total costs and the costs of treatment. The mean time of follow-up was 84 months. The increase in treatment cost was significantly related like length of stay, extension of surgery, postoperative complications, and need for adjuvant treatment. However, no statistically significant differences were observed among the treatment costs and patients’ gender and age, anesthetic risk evaluation (ASA) or presence of comorbidities (ACE-27). **Conclusion:** A description of the costs helps to evaluate expenditures and rationalize the use of resources. These guidelines can reduce unnecessary expenditure on exams and prolonged hospitalization, as well as the indication of adjuvant treatment in patients without any real benefit validated by evidence-based medicine. Control of these factors would contribute significantly to avoid a rise in the costs of treatment.

**P115 (COSM Poster #137)**

**THE ROLE OF TOTAL LARYNGECTOMY IN THE MANAGEMENT OF INVASIVE WELL-DIFFERENTIATED THYROID CANCER.** Matthew L Carlson, MD, Jeffery R Janus, MD, Amy M Saleh, MD, Jan L Kasperbauer, MD; Mayo Clinic, Rochester, MN.

**Background & Objective:** Patients presenting with well-differentiated thyroid carcinoma (WDTC) limited to the thyroid gland carry an excellent prognosis and generally can anticipate a near normal life expectancy. Extrathyroidal extension is rare (<15%) and represents an adverse prognostic indicator roughly halving 10-year survival estimates. Laryngeal invasion is even more uncommon and occurs in less than one eighth of all cases of invasive WDTC. Surgical resection with negative margins remains the fundamental management strategy

**P116 (COSM Poster #138)**

**ROUTINE PREOPERATIVE THYROID IMAGING IN PATIENTS UNDERGOING MINIMALLY-INVASIVE PARATHYROID SURGERY (MIPS) FOR PRIMARY HYPERPARATHYROIDISM.** Jeffrey R Harris, MD FRCSc, Brittany R Barber, BMSc, David W Cote, MD MPH, Hadi Seikaly, MD FRCSc; University of Alberta.

**Background:** The advancement of new localization techniques and intraoperative intact parathormone (iPTH) measurements has allowed for minimally-invasive parathyroidectomy surgery (MIPS) to become a mainstay of head and neck surgery. However, lack of surgical exploration can cause concurrent thyroid pathology to go undetected. The aim of this study is to assess the rate and type of thyroid pathology detected by preoperative thyroid imaging in patients with primary hyperparathyroidism (pHPT), and to evaluate the utility of preoperative thyroid scanning in patients undergoing MIPS for pHPT. **Methods:** A retrospective review of all patients receiving MIPS at the University of Alberta Hospital was undertaken. Cases were reviewed for the type and rate of thyroid pathology detected with preoperative thyroid scanning, total costs of treatment, and the costs of imaging exams. **Results:** 132 patients receiving MIPS were reviewed at the UAH. Of these, 57% had thyroid pathology detected by ultrasonography. Of the pathologies detected, 65% were solitary nodules, 21% showed multiple nodules, 7% showed diffuse nodular thyroiditis, 7% showed Hashimimoto’s thyroiditis. 43% of nodules were deemed suspicious and required an FNA. In 11% of cases, conversion to an open hemi-thyroidectomy or total thyroidectomy was undertaken, and ultimately 2 patients were diagnosed with concurrent papillary thyroid carcinoma on final pathology. **Conclusion:** Thyroid pathology is common in patients undergoing MIPS for pHPT. Thus, routine use of preoperative thyroid ultrasound in patients with pHPT undergoing MIPS should be undertaken to diagnose concurrent and potentially severe thyroid disease and avoid surgical re-exploration in the head and neck.

**P117 (COSM Poster #139)**

**UTILITY OF LEVEL VI NECK DISSECTION IN DIAGNOSTIC HEMITHYROIDECTOMIES.** Jeffrey R Harris, MD FRCSc, David W Côté, MD MPH, Jason A Vaz, BSc, Hadi Seikaly, MD FRCSc; University of Alberta.

**Background:** Diagnostic hemithyroidectomy is indicated for investigation of suspicious and atypical thyroid nodules, many of which are later diagnosed as malignant lesions. The utility of level VI central compartment neck dissection, for the early detection of lymph node (LN) involvement, in conjunction with this procedure has yet to be established. **Methods:** A review of patients undergoing diagnostic hemithyroidectomy with level VI neck dissection from October 1st,
**P118 (COSM Poster #140)**

A CONTEMPORARY NOMENCLATURE SYSTEM FOR LOCALIZING PARATHYROID ADENOMAS, Mauricio A Moreno, MD; Glenda G Callender, MD, Elizabeth G Grubbs, MD MPH, Katherine Woodburn, MD, Beth S Edeiken-Monroe, MD, Jeffrey Lee, MD, Nancy D Perrier, MD; University of Arkansas for Medical Sciences; MD Anderson Cancer Center.

**Background:** Despite major advances in the treatment of hyperparathyroidism, there is no accepted nomenclature for the anatomic location of abnormal parathyroid glands. We have developed a nomenclature system that succinctly specifies the location of parathyroid adenomas in the neck and report the experience in a large, contemporary cohort.

**Methods:** The system describes 7 common locations for parathyroid glands; sites A, B, and C describe superior glands and sites D, E, F and G describe inferior glands (figure). We reviewed 271 patients operated upon for sporadic primary hyperparathyroidism between January 2006 and May 2008.

**Results:** According to our nomenclature system, gland locations included: 12.5% A (adherent to posterior thyroid capsule); 17.3% B (behind thyroid, in tracheoesophageal groove); 13.7% C (close to clavicle, prevertebral space); 12.2% D (directly over the recurrent laryngeal nerve); 25.8% E (easy to identify, near the inferior thyroid pole); 7.4% F (fallen into thymus); 0.4% G (within thyroid gland). 10.7% of the patients presented with multigland disease, with type A and E glands being the most frequently involved. Type F glands were associated with a longer operative time (p=0.0487) and type E glands with a shorter postoperative observation period (p=0.0195). Cure was achieved in 96.3% of the patients.

**Conclusions:** A nomenclature system that provides a simple means to describe the location of parathyroid adenomas, predicts operative time and accurately identifies patients who may need longer postoperative observation. Importantly, this novel system has allowed surgeons, endocrinologists, radiologists and pathologists to speak a common language when communicating about these patients.

---

**P119 (COSM Poster #141)**

SENSITIVITY AND SPECIFICITY OF ULTRASOUND AS THE PRIMARY SCREENING MODALITY FOR LOCALIZATION OF PRIMARY HYPERPARATHYROID DISEASE, Joshua M Levy, Emad Kandil, MD FACSS, Lillian C Yau, PhD, Jonathan D Cuda, MD, Ralph P Tufano, MD FACSS; Tulane University and Johns Hopkins University.

**Introduction:** Advances in the preoperative localization of parathyroid adenomas have made it possible to perform minimally invasive parathyroid surgery for the treatment of primary hyperparathyroidism. Prior studies have identified technetium-99m-sestamibi scintigraphy and ultrasonography as the most accurate screening modalities, and as a result many surgeons advocate the use of both techniques to localize disease. The goal of this study was to independently evaluate both ultrasound and sestamibi as single modality preoperative screening tools for the localization of primary parathyroid adenomas.

**Methods:** This is a retrospective chart review of 440 patients undergoing surgery for primary hyperparathyroidism from a single academic institution between 1999 and 2009. Patients receiving ultrasound and sestamibi as part of their preoperative workup were included for analysis, with both modalities independently compared to surgical findings.

**Results:** Adjusted for age and gender, 440 patients were found to meet inclusion criteria and were included in the analysis. Sensitivities for correct localization of a single parathyroid adenoma for sestamibi versus ultrasound were: 83% (95% CI 78 to 86) vs. 72% (95% CI 67 to 76), while specificities for the two techniques were 47% (95% CI 31 to 62) and 58% (95% CI 0.42 to 0.72) respectively. Ultrasound surprisingly identified 31% of the patient with nodular thyroid disease requiring further investigation.

**Conclusion:** Ultrasonography alone is useful as a first line test for the localization of parathyroid adenomas in patients with primary hyperparathyroidism. Although the sensitivity is less than Tc99 mibi, the similar specificity and the ability to detect concomitant thyroid pathology lead us to recommend the use of ultrasound as the initial screening modality for localization of parathyroid adenomas in primary hyperparathyroidism. Sestamibi scans should be reserved for cases where ultrasound gives equivocal localization results.

---

**P120 (COSM Poster #142)**

TRANSAXILLARY GASLESS ROBOTIC THYROID SURGERY WITH NERVE MONITORING: INITIAL EXPERIENCE IN A NORTH AMERICAN CENTER, Emad Kandil, MD, Xin Zhong, BS, Paul Friedlander, MD, Ryan Winters, MD, Charles Beliveau, MD, Christopher Holsinger, MD; Tulane University, M.D. Anderson.

**Background:** Minimally invasive thyroid surgery using various techniques is well described. Recently, robotic thyroidectomy with gasless transaxillary technique has been FDA approved. The present study reviews our initial experience with the technique with added intraoperative monitoring to assess its safety and feasibility.

**Methods:** The study group consisted of 10 consecutive patients with suspicious thyroid nodules who were candidates for thyroid lobectomy from September to December 2009. All procedures were successfully completed with intraoperative nerve monitoring. No cases were converted to an open procedure. All patients underwent intraoperative nerve integrity monitoring and postoperative direct laryngoscopy on their postoperative visit. The patients’ demographic information, comorbidities, operative times, learning curve, complications, and postoperative hospital stay were evaluated.

**Results:** The mean age was 46 years (range 29-69) and nine of the ten patients were females. The mean operating time was 131 minutes (range 101-203 minutes) and the mean operating time with the da Vinci system was 55 minutes. All patients were discharged home after an overnight stay. One patient developed transient radial nerve neuropathy that resolved spontaneously after few days. There were no other postoperative complications. None of the patients complained of postoperative neck pain. Postoperative laryngoscopy showed intact mobile vocal cords in all patients.

**Conclusions:** Robotic endoscopic thyroid surgery with gasless transaxillary approach is feasible and safe in the treatment of suspicious thyroid nodules. Monitoring of the RLN during this approach is feasible.
Certificate of Incorporation

Certificate of Incorporation of

The American Head and Neck Society, Inc.

Under Section 803 of the Not-for-Profit Corporation Law

1. The name of the Corporation is THE AMERICAN HEAD AND NECK SOCIETY, INC.

2. This Corporation has not been formed for pecuniary profit or financial gain, and shall not be conducted or operated for profit, and no part of the assets, income or net earnings of the Corporation is distributable or shall inure to the benefit of the directors, officers, or other private persons, except to the extent permitted under the Not-for-Profit Corporation Law. Upon the dissolution of this Corporation, no director, officer, or other private person shall be entitled to any distribution or division of its remaining property or its proceeds, and the balance of all money and property of the Corporation shall pass to, or shall inure to the benefit of, those organizations described in Section 201 of the Not-for-Profit Corporation Law and Section 501(c)(3) of the Internal Revenue Code of 1986, which are not private foundations described in Section 509(a) of such Code. Any such assets not so disposed of shall be disposed of by the Supreme Court of the State of New York for the County in which the principal office of the Corporation is then located, as provided by law, exclusively for such purposes or to such organization or organizations as said Court shall determine, which are organized and operated for the purposes set forth in Paragraph “3” below.

3. The purposes for which the Corporation is formed and the powers which may be exercised by the Corporation, in addition to the general powers set forth in Section 202 of the Not-for-Profit Corporation Law of the State of New York, are:

(a) to advance knowledge relevant to medical and surgical control of neoplasms of the head and neck;
(b) to solicit, obtain, apply for, and spend funds in furtherance of any activities or purposes of the Corporation;
(c) in general, to do any and all acts or things and to exercise any and all powers which may now or hereafter be lawful for the Corporation to do or exercise under and pursuant to the laws of the State of New York for the purpose of accomplishing any other purpose of the Corporation as set forth herein;
(d) to engage in any and all lawful activities incidental to any of the foregoing purposes of the Corporation.

4. The Corporation is organized exclusively to achieve public objectives, including for such purposes, the making of distributions to organizations that qualify as exempt organizations described in Section 115 or Section 501(c)(3) of the Internal Revenue Code of 1986, provided that such organizations are not private foundations described in Section 509(a) of such Code. The Corporation shall not carry on any other activities not permitted to be carried out by a corporation exempt from federal income tax under Section 501(c)(3) of such Code or by a corporation contributions to which are deductible under Section 170(c)(2) of such Code (or the corresponding provisions of any future United States Internal Revenue Law.)

5. Nothing contained herein shall authorize this corporation to undertake or to carry out any of the activities specified in paragraphs (b) through (u) of Section 404 of the Not-for-Profit Corporation Law, or to establish, maintain or operate a hospital or to provide hospital service or health-related service, a certified home health agency, a hospice, a health maintenance organization, or a comprehensive health services plan, as provided for by Article 28, 36, 40 and 44, respectively, of the Public Health Law or to solicit, collect or otherwise raise or obtain any funds, contributions or grants from any source, for the establishment, maintenance or operation of any hospital or to engage in the practice of medicine or any other profession required to be licensed by Title VIII of the Education Law.

6. No substantial part of the activities of this Corporation shall consist of carrying on propaganda or otherwise attempting to influence legislation, and the Corporation shall not participate in, or intervene in (including the publication or distribution of statements), any political campaign on behalf of any candidate for public office.

7. The Corporation is a corporation as defined in subparagraph (a)(5) of Section 102 of the Not-for-Profit Corporation Law, and it is a Type B Corporation.

8. The principal office of the Corporation is to be located in the City of Syracuse, County of Onondaga and State of New York.

9. The territory in which the Corporation’s activities are principally to be located is the territorial limits of the United States of America, the Domain of Canada and the Pan-American countries.

10. The number and manner of election or appointment of the directors constituting the Board of Directors shall be as provided in the Bylaws, except that the number of said Board members shall not be less than three (3). Members of the Board of Directors need not be residents of the State of New York. The names and addresses of the Directors of the Corporation who shall act until the first meeting of the Board of Directors, all of whom are over the age of eighteen (18) and are citizens of the United States, are:

Names
Addresses
[Names and Addresses omitted.]

11. Management of the business and affairs of the Corporation is vested in the Board of Directors which shall use its best efforts to carry out in good faith the purposes of the Corporation.

12. To further the Corporation’s objectives and purposes, the Corporation shall have and may exercise all of the powers conferred by the New York Not-for-Profit Corporation Law in pursuit of the purposes expressed in Paragraph THREE hereof. Without limiting the generality of the foregoing, the Corporation shall have power to sue and be sued, to
Certificate of Incorporation

own, take title to, receive and hold, lease, sell and resell, in fee simple or otherwise, property real, personal or mixed wherever situated and however acquired, without limitation as to amount or value. The Corporation shall have authority to encumber property by deed of trust, pledge or otherwise; to borrow money and secure payment of same by lien or liens of the realty or personal property of the Corporation; to lease, build, erect, remodel, repair, construct and/or reconstruct any and all buildings, houses or other structures necessary, proper or incident to its needs and proposes; and to do any and all things incident to the carrying out of the objectives and purposes as stated and as limited herein. The Corporation shall have full powers or management, investment and reinvestment and the collection of all rents, revenues, issues and profits arising therefrom.

13. The Corporation is to have members.

14. The Corporation is to be divided into such classes of members as the By-Laws provide. The designation of each class of members, the manner of election or appointment, and the qualification and rights of the members of each class (including conferring, limiting, or denying the right to vote) shall be set forth in the By-Laws.

15. The Secretary of State of the State of New York is hereby designated as the agent of the Corporation upon whom process may be served, and the post office address to which the Secretary of State shall mail a copy of any such process served upon him is as follows: c/o Richard R. Gacek, M.D., Professor and Chairman, Department of Otolaryngology, State University of New York Health Science Center, 750 East Adams Street, Syracuse, New York 13210.

Mission Statement

The purpose of this Society is:

• to promote and advance the knowledge of diagnosis, treatment and rehabilitation of patients with neoplasms and other diseases of the head and neck
• to promote and advance the knowledge of prevention of neoplasms and other diseases of the head and neck
• to promote and advance research in diseases of the head and neck, and
• to promote and advance the highest professional and ethical standards.
Constitution

Article I
Section 1. The name of the Corporation shall be The American Head and Neck Society, Inc.

Article II
Section 1. The purpose of this Society is to promote and advance the knowledge of diagnosis, treatment and rehabilitation of patients with neoplasms and other diseases of the head and neck and the prevention of neoplasms and other diseases of the head and neck.

Section 2. It is the objective of this Society to promote and advance research in neoplasms and other diseases of the head and neck.

Section 3. It is the objective of this Society to promote the highest professional and ethical standards.

Article III
Section 1. Members of this Society shall be designated as Fellows, and shall consist of six classes
(a) Active
(b) Honorary
(c) Corresponding
(d) Senior
(e) Associate
(f) Candidate

Section 2. Active Fellows of this Society shall be those who maintain a license to practice medicine and who are actively engaged in diagnosis, treatment and rehabilitation of patients with neoplasms and other diseases of the head and neck and the prevention of neoplasms and other diseases of the head and neck.

Section 3. Qualifications for Active Fellowship. An applicant for Active Fellowship shall be a Diplomate of a particular specialty board, or have credentials that are equivalent to those issued by member boards of the American Board of Medical Specialties. Surgeons must be a member of the American College of Surgeons, a Fellow of the Royal College of Surgeons (Canada), or have similar credentials. A significant portion of practice shall be concerned with managing patients with neoplasms and other diseases of the head and neck. Further qualifications and requirements for Active Fellowship are contained in the By-Laws, Article VI, Sections 1 and 2.

Section 4. Qualifications for Honorary Fellowship. Honorary Fellowship shall be a distinction bestowed by the Society on an individual who has made outstanding contributions to the field of head and neck oncology.

Section 5. Qualifications for Corresponding Fellowship. Corresponding Fellowship shall be granted to those who, in the judgment of the Council, are actively engaged in the prevention, diagnosis, treatment and rehabilitation of patients with neoplasms and other diseases of the head and neck and who reside in a country other than the United States or Canada.

Section 6. Qualifications for Senior Fellowship. Any Active Fellow, upon cessation of active practice, may request by writing to the Secretary a change in status to Senior Fellowship.

Section 7. Qualifications for Associate Fellowship. A candidate for election to Associate Fellowship shall be a physician, dentist or allied scientist who has demonstrated a special interest in the field of head and neck oncology.

Section 8. Qualifications for Candidate Member. The trainee currently enrolled in, or a graduate of, an approved residency program in Otolaryngology, Plastic Surgery, or General Surgery or in a Fellowship Program approved by the Joint Training Council may become a Candidate Member. This nonvoting membership is subject to fees established by the Council. The membership shall expire if the candidate member has not made application for Active Fellowship in The American Head and Neck Society, Inc. five years after the completion of training.

Section 9. Privileges of Members. All members shall have the same rights and privileges except that only Active Fellows in good standing shall have the privileges of voting in the conduct of the affairs and business of the Society or of holding office or of chairing Standing Committees.

Article IV
Meetings
Section 1. The annual meeting of this Society shall be held at such time and place as may be fixed by the Council at its annual meeting.

Section 2. The annual meeting shall consist of at least one scientific session and one business session.

Section 3. The scientific session shall be open to all Fellows of the Society and members of the medical profession. Attendance at any business session is limited to Fellows of the Society.

Section 4. Only Active Fellows in good standing shall have the privilege of a vote in conduct of the affairs and business of the Society.

Article V
Officers
Section 1. The officers of this Society shall be President, President-Elect, Vice-President, Secretary, and Treasurer.

Article VI
Board of Directors
Section 1. The governing body of this Society shall be the Council, consisting of the President, President-Elect, Vice-President, Secretary, Treasurer, and Past Presidents (for a period of three years following the termination of term of office). In addition, there shall be nine Fellows-at-Large, three of whom shall be elected each year to serve terms of three years each. At no time shall the Council exceed eighteen in number. The manner of election of officers and members of the Council is stated in the By-Laws, Article VII, Sections 1 and 2.

Article VII
Amendments to the Constitution or Bylaws
Section 1. A proposed amendment to the Constitution or By-Laws must be submitted to the Secretary in writing not less than two months before a meeting of the Council, and must be signed by at least two Active Fellows. The Secretary shall forward the proposed amendment to the Constitution and Bylaws Committee for review and comment. The Constitution and Bylaws Committee will make a periodic review of the Constitution and Bylaws and recommend modification which may be submitted as amendments. Any proposed amendment must first be acted upon by the council. The Secretary shall mail a copy of any proposed amendment to each Active Fellow not less than one month prior to the annual meeting of the Society. Two-thirds vote of the Active membership present at the meeting shall be required for acceptance.
Bylaws

Article I
Rights and Duties of Members
Section 1. Any Active Fellow shall have all the rights of Fellowship, shall be subject to all the duties, roles and responsibilities incumbent upon the members of any scientific parliamentary body.

Article II
Delinquents
Section 1. Unless excused by the Council, a Fellow delinquent in dues for two consecutive years, or attendance for four consecutive years, shall be dropped from Fellowship. Delinquency in dues is defined as failure to pay by the end of the calendar year.

Article III
Dues
Section 1. The amount of the Society's dues shall be determined by the Council. The Council shall have the authority to establish an initiation fee or special assessment.

Article IV
Order of Business
Section 1. The regular order of business at annual meetings shall be carried out in a manner prescribed by the Council.

Article V
Special Provisions
Section 1. All conditions, circumstances, emergencies or contingencies not covered by this Constitution and its Bylaws shall be dealt with and administered by the directive of the Society's Council, subject to approval by the membership at the next annual meeting.

Article VI
Qualifications for Fellowship
Section 1. Candidates desiring election to Fellowship in any class other than Associate Fellow must hold a valid, unrestricted license to practice medicine in the state or country in which they reside and shall be proposed by two Active Fellows with at least one from the applicant's local geographical area. A special form will be provided by the Secretary for this purpose. Both of the sponsors must submit letters of recommendation pertaining to the qualifications of the candidate.

Section 2. Special Qualifications for Active Membership.
A. In addition to fulfilling the requirements under the Constitution, Article III, Section 3, surgeon candidates must submit evidence that they have the skill and capacity to diagnose and treat neoplasms and other diseases of the head and neck.
B. An applicant for Active Fellowship shall provide documentation that he or she has received adequate training in the management of patients with head and neck tumors and that a significant portion of current professional activity is devoted to the care of such patients. Such documentation will include a description of experience during residency and/or fellowship training, a summary of subsequent post training experience, and a listing of at least 35 patients with head and neck tumors managed during preceding year. Additional evidence of academic activity such as one paper published on cancer of the head and neck is required.
C. Active Fellows must be members of the American College of Surgeons or its equivalent.
D. Active Fellows are expected to uphold ethical standards.

Section 3. Special Qualifications for Corresponding Fellowship.
A. Corresponding Fellows shall be physicians who, by their professional associations and publications, would appear in the judgment of the Council to be qualified to treat neoplasia and diseases of the head and neck. All proposals for candidates for Corresponding Fellowship shall be accompanied by a curriculum vitae of the candidate, a letter of recommendation from at least two Active Fellows. The delinquency clause relative to failure to attend meetings will not pertain to this class of membership.

Section 4. Election to Fellowship
A. All proposals for candidates for any class of Fellowship shall be sent to the Council through the Secretary. Subsequent to approval by the Council, nominees' names must be circulated to the membership at least 120 days before the annual meeting. Fellows shall be given an opportunity to make written objections at least 60 days in advance of the annual meeting. Objections will be investigated by the Credentials Committee and presented to the Council for a vote. The Council will use the AMA Code of Ethics as a guide in this matter.
B. Election to any class of membership shall require three-fourths favorable vote of the Council.
C. A candidate for Active Fellowship must be present at the annual meeting to be inducted.

ARTICLE VII
Officers of the Society
Section 1. Election of Officers. The officers of the Society shall be a President, President-Elect, Vice-President, Secretary, and Treasurer, who shall be elected at regular annual business meetings of the Society.

Section 2. Accession to Office. The newly elected officers shall assume their duties before the adjournment of the meeting at which they have been elected.

Section 3. Tenure of Office.
A. The President and President-Elect, and Vice-President shall serve for a term of one year. The Secretary and the Treasurer shall serve for a term of three years and may be elected to one additional term.
B. An outgoing President (Past President) automatically becomes a member of the Council to serve for a period of three years. A past-president's membership on the Council which shall be terminated by death or other incapacity to serve shall remain vacant until filled by regular succession.

Section 4. Vacancies in Office. Vacancies in office occurring between elections shall be filled by appointment by the President. These appointments shall be subject to written approval of a majority of the Council. Should the office of the President become vacant between elections, it shall automatically be filled by the President-Elect. Should the offices of both President and President-Elect become vacant, these offices will be served by the Secretary.

Article VIII
Duties of the Officers
Section 1. Duties of the President.
A. The President shall preside at meetings of the Society and shall have the power to preserve order and to regulate the proceedings according to recognized rules.
Bylaws

B. The President shall serve as Chairman of the Council.
C. The President shall appoint standing and special committees, except the Nominating Committee. See Article X, Section 2.
D. The President shall fill vacancies in offices that occur in the interim between regular meetings subject to approval by a Council majority.
E. The President shall be an ex-officio member of all standing committees.

Section 2. Duties of the Vice President.
A. The Vice-President shall serve and assist the President and President-Elect.
B. The Vice-President shall oversee the work of the committees and shall direct, plan and implement the long range and strategic planning retreat of the Council listed in Article IX section 2E.

Section 3. Duties of the President-Elect.
A. The President-Elect shall perform all duties that may be delegated to him or her by the President.
B. In the absence of the President, the President-Elect shall perform all duties of the President and shall preside at all meetings.

Section 4. Duties of the Secretary.
A. The Secretary shall keep or cause to be kept in permanent form an accurate record of all transactions of the Society.
B. The Secretary shall send due notice of all meetings to members; notice of at least 15 days shall be provided prior to Council meetings.
C. The Secretary shall notify all committee members of their appointments and the duties assigned to them.
D. The Secretary shall notify all applicants for membership of the action taken by the Society.
E. The Secretary shall keep a correct alphabetical list of members, together with their current addresses and shall supply application forms to members who apply for same.
F. The Secretary shall act as custodian of all papers of the Society and its committees.

Section 5. Duties of the Treasurer.
A. The Treasurer shall collect, receive and be accountable for funds accrued by the Society from dues or other sources.
B. The Treasurer shall deposit all moneys in a special bank account under the official name of the Society, in a city of his choice.
C. The Treasurer shall disburse from the treasury such funds as may be necessary to meet appropriations and expenses of the Society.
D. The Treasurer’s financial records shall be audited at each regular annual meeting by a specially appointed auditing committee, who will report at the business session.
E. The Treasurer shall prepare and submit an annual budget for the following year to the Finance committee for subsequent approval of the Council at the fall meeting.

ARTICLE IX

The Council

Section 1. Composition of the Council. The Council shall consist of the officers, the three immediate Past Presidents, and nine Fellows at Large, three of whom shall be elected annually to serve staggered three-year terms. A Fellow at Large elected to the Council may not succeed himself or herself.

Section 2. Duties of the Council.
A. The Council shall conduct the affairs of the Society during the interim between sessions.
B. The Council shall pass on all applicants for Fellowship and present its recommendations to the Society at one of its business sessions so that necessary action may be taken.
C. The Council shall report to the members at regular business sessions all decisions and recommendations made so as to obtain approval of the whole membership of its actions.
D. Should the membership disapprove of any action of the Council the questions shall be referred back for further consideration and reported at the next business meeting.
E. The Council shall have a long range and strategic planning retreat at least every three years.

Section 3. Quorum and Manner of Acting.
A. A majority of officers and Council members shall constitute a quorum. A majority of the quorum at any meeting of the Council shall constitute action by the Council unless otherwise provided by law or by these By-Laws.
B. Any action required or permitted to be taken at a meeting of the Council may be taken without a meeting if a consent in writing setting forth the action to be taken shall be signed by all Council members entitled to vote.
C. Meetings may be conducted by telephone provided that all officers and Council members participating in such a meeting may communicate with each other. A majority of officers and Council members shall constitute a quorum for telephone meetings and the act of a majority of the quorum shall constitute action by the Council.
D. Officers and Council members shall not receive compensation for their services, but, by action of the Council, expenses may be allowed for attendance at meetings of the Council or for official representation of the Society and the Council may underwrite any activities that it deems essential to the functioning of the Society.

ARTICLE X

Committees

Section 1. Other than as specifically stated below, The President shall appoint committee members to serve for three years. Initial appointments shall be staggered such that approximately one-third of committee members shall change each year (other than the Scientific Program Committee and Nominating Committee).

Section 2. Scientific Program Committee. This committee shall be appointed by the President to serve for one year and shall consist of at least three Active Fellows. It shall be the duty of this committee to establish a scientific program at the Annual Meeting.

Section 3. Nominating Committee. The Nominating Committee shall consist of the three immediate past presidents and two Active Fellows elected at the business meeting. The Nominating Committee shall be chaired by the immediate past President. This committee shall prepare a slate of officers and members-at-large of the Council for vote at the next annual meeting. (See Article VII, section 2).

Section 4. Credentials Committee. This committee shall be chaired by the President and shall additionally consist of the two immediate Past Presidents plus two Active Fellows appointed by the President. In addition, the Secretary shall be a member, ex officio. The Credentials Committee shall advise the Council on the credentials of candidates for membership.
Section 5. Education Committee. This committee shall consist of at least three Active Fellows. It shall be the duty of this committee to develop appropriate educational activities for the Society.

Section 6. Research Committee. This committee shall consist of at least six Active Fellows. It shall be the duty of this committee to: increase the quality and quantity of research conducted in head and neck oncology; encourage the design and implementation of new research protocols; review applications for research funds; and suggest possible new methods of research funding.

Section 7. Council for Advanced Training in Oncologic Head and Neck Surgery. This committee shall consist of ten Active Fellows, each to serve a five-year term, with appointments staggered so that two Active Fellows are appointed to membership on this committee each year. The President’s appointments to this committee shall be submitted for approval by the Council. It shall be the duty of this committee to evaluate training programs as to whether they qualify for Phase III training and to make recommendations to the Society concerning what constitutes adequate training in head and neck oncologic surgery.

Section 8. Constitution and By-Laws Committee. This committee shall consist of at least five Active Fellows, with the Secretary serving ex-officio. It shall be the duty of this committee to completely evaluate the Constitution and By-Laws every three years to maintain their relevance.

Section 9. Finance Committee. This committee shall consist of three Active Fellows elected at the business meeting to serve three year terms so that one member is elected each year. The Treasurer shall be an ex officio member. It shall be the duty of this committee to audit the financial records of the Society and review investments and to report at the annual business meeting. This committee shall review the financial reports of the Treasurer prior to the presentation to the Council.

Section 10. CME Compliance Committee. This committee should consist of at least three Active Fellows. It shall be the duty of this committee to monitor and ensure compliance with the CME requirements of the Accreditation Council for Continuing Medical Education; to review and improve the quality of the educational programs of the Society; and to review annually, prior to the annual meeting, any potential financial conflict of interest of members of the Program Committee, Program Chairs, faculty, and presenters.

Section 11. Quality of Care Committee. This committee should consist of at least three Active Fellows. It shall be the duty of this committee to formulate quality of care standards for patients with head and neck neoplasms; to promote compliance with these standards as a framework for the measurement of quality head and neck care; to disseminate these standards to the membership of the Society; and to provide AHNS representation to the applicable committees of other head and neck medical societies that are charged with the development of specialty specific quality standards upon which pay-for-performance benchmarks may be based.

Section 12. Publications Committee. This committee should consist of at least three Active Fellows appointed by the President. This committee shall be chaired by the Associate Editor for the Head and Neck Section of the Archives of Otolaryngology-Head and Neck Surgery. In addition, the Archives of Otolaryngology-Head and Neck Surgery Editor, if a member of the Society, shall be a member of this committee, ex-officio. The Secretary and President will be members of this committee. It shall be the duty of this committee to assure manuscript submission to the official journal of the Society, the Archives of Otolaryngology-Head and Neck Surgery, prior to presentation at the annual meeting; to assure rapid peer review of submitted manuscripts; and to facilitate the timely publication of the proceedings of the annual meeting in a dedicated issue of the official journal of the Society.

Section 13. Prevention and Early Detection Committee. This committee shall consist of at least six Active Fellows. It shall be the duty of this committee to: develop, facilitate the implementation, and participate in programs directed toward the prevention and early detection of oral and head and neck cancers and to cooperate with national and international organizations in these efforts.

Section 14. Endocrine Surgery Committee. This committee should consist of at least three Active Fellows. It shall be the duty of this committee to increase research and education related to head and neck endocrine disorders, to encourage endocrine-related contributions to the annual meeting, and to foster interaction between the Society and other societies and organizations with interests in endocrine disorders.

Section 15. Website Committee. This committee shall consist of at least three Active Fellows. It shall be the duty of this committee to recommend and implement newer methods to optimize communication or dissemination of information within the organization. The committee shall develop and showcase new and emerging technologies and shall also be responsible for updating and revising the AHNS web site and making sure it is kept with the most current and accurate information.

Section 16. Awards Committee. This committee shall consist of at least six active fellows, including the Chair. Committee members are appointed by the President of the AHNS. It shall be the duty of this committee to evaluate manuscripts submitted for awards to be given at the annual meeting of the AHNS. An author may submit only one manuscript per award category. Fellows are not eligible for resident awards. Manuscripts will be redacted of all author and institutional identifying information by the chair prior to being send to committee members for scoring. Manuscripts should be scored by at least five committee members. Manuscripts will not be scored by a committee member if he/she is an author on the paper. The Chair may request a scoring by another qualified AHNS fellow; if not enough committee members are available to score a manuscript. Deadlines for submission of manuscripts will be determined annually and announced during the call for abstracts. Authors of abstracts accepted for oral presentation will be invited to submit a manuscript for an award. The Chair will work with the Program Committee to ensure that award-winning papers are given adequate time for oral presentations.

Section 17. History Committee. This committee shall consist of at least three Active Fellows. It shall be the duty of this committee to preserve the history of the society by conducting interviews of past leaders, researching and organizing past records and promoting historical information on the web site and through other mediums.

Section 18. Humanitarian Committee. This committee shall consist of at least three active Fellows. It shall be the duty of this committee to encourage and support volunteer efforts of
Bylaws

AHNS members to assist in the care of underserved populations and to develop information, communication, and organizational resources regarding humanitarian outreach activities.

Section 19. Standing Committees. Other standing Committees shall be constituted as described in the Policies and Procedures.

Section 20. Ad hoc Committee(s). As necessary, the President may appoint one or more Ad Hoc committees to serve for one year.

ARTICLE XI

Quorum

Section 1. A quorum for any meeting of the Council shall be a majority of those persons then serving as members of the Council.

Section 2. A quorum for the regular business session of the society shall be 18 Active Fellows.

ARTICLE XII

Society Assets

Section 1. The interest in the funds property and other assets of the Society of any member whose membership shall terminate for any reason except the dissolution of the Society shall, ipso facto, immediately cease and such members and the representatives of such member shall have no claim against the Society or against the other members of their representatives or any of them.

Section 2. In the case of dissolution of the Society, the funds, property, and other assets shall be used for the purpose of furthering the expressed purposes for which this Society was formed and no member shall be entitled to receive any of the assets upon liquidation.

Section 3. If the Society’s annual receipts exceed the annual expenses in any given year, the Council may, by a majority vote, elect to distribute the surplus for such scientific or educational purposes as the Council shall deem to be most consistent with the Society’s purposes; or it may, should it reasonably anticipate a need for operating surplus to meet future expenses, accumulate such surplus in an interest bearing account or otherwise.

ARTICLE XIII

Indemnification

Section 1. The Society shall indemnify any and all of the directors or officers, former directors or officers, employees, agents, or any person who may have served at its request or by its election as a director or officer of another society or association, or his heirs, executors and administrators, against expenses (including attorney fees, judgments, fines and amounts paid in settlement) actually and necessarily incurred by them in connection with the defense or settlement of any action, suit or proceeding in which they, or any of them, are made parties or a party, by reason of being or having been directors or a director, officer, employee or agent of the Society or of such other Society or association, except in relation to matters as to which any such action, suit or proceeding to be liable for willful misconduct in the performance of duty and to such matters as shall be settled by agreement predicated on the existence of such liability. The termination of any action, suit, or proceeding by judgment, order, settlement, conviction, or upon a plea of nolo contendere or its equivalent shall not, of itself, create a presumption that the person is engaged in willful misconduct or in conduct in any way opposed to the best interests of the Society. The provisions of this section are severable, and therefore, if any of its provisions shall contravene or be invalidated under the laws of a particular state, country or jurisdiction, such contravention or invalidity shall not invalidate the entire section, but it shall be construed as if not containing the particular provision or provisions held to be invalid in the particular state, country, or jurisdiction and the remaining provisions shall be construed and enforced accordingly. The foregoing right of indemnification shall be in addition to and not exclusive of other rights to which such director, officer, employee or agent may be entitled.

ARTICLE XIV

Merger Provisions

To facilitate the merger of the Society with The Society of Head and Neck Surgeons, an Illinois nonprofit corporation (“SHNS”), pursuant to an agreement calling for the SHNS to be dissolved and its assets transferred to the Society and the Society recast as The American Head and Neck Society, Inc. (“AHNS”) to serve as a successor of both entities, notwithstanding any other provision of the Constitution or these By-Laws to the contrary:

1. The Council shall be expanded as necessary to include the officers and directors of the SHNS, who shall serve on the Council with their voting status as provided by the SHNS bylaws until their term of office within the SHNS shall expire. The Council shall return to its size and with its composition provided in Article IX hereof through the passage of time.

2. The President-Elect of the SHNS shall become as President-Elect of the AHNS following the completion of his term as President-Elect of the SHNS. The President-Elect of the Society shall become President of the AHNS to serve a term of six months (i.e., from May 15, 1998 through November 14, 1998), whereupon the said President-Elect of the SHNS shall serve as President of the AHNS to serve a term of six months (i.e., from November 15, 1998 through the membership meeting in May of 1999 or until his successor shall assume office). During the combined one-year term of office, the two said individuals shall regularly consult and cooperate with each other on all meaningful and significant decisions to be made during the year so that it may appear that they are serving as co-presidents for the full year, provided, however, that the AHNS shall have only one President in office at one time. At the conclusion of this one-year term, the President-Elect next in line shall succeed to the Presidency.

3. The members of the SHNS shall be admitted to the Society recast as the AHNS in the membership category that correspond to that which they hold in the SHNS. More specifically, Active Members of the SHNS shall become Active Fellows of the AHNS; Senior Member of the SHNS shall become Senior Fellows of the AHNS. Consulting Members of the SHNS shall become Associate Fellows of the AHNS. International Corresponding Members of the SHNS shall become Corresponding Members of the AHNS. Honorary Members of the SHNS shall become Honorary Fellows of the AHNS. Candidate Members of the SHNS shall become Candidate Members of the AHNS.

4. The Council shall act to preserve the unique heritage and history of the SHNS and the ASHNS.
<table>
<thead>
<tr>
<th>FACULTY/PRESENTER</th>
<th>PAGE #</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abuzeid, Waleed</td>
<td>28</td>
</tr>
<tr>
<td>Andrews, Genevieve</td>
<td>25</td>
</tr>
<tr>
<td>Basu, Devraj</td>
<td>28</td>
</tr>
<tr>
<td>Benlyazid, Adil</td>
<td>25</td>
</tr>
<tr>
<td>Bergmann, Christoph</td>
<td>30</td>
</tr>
<tr>
<td>Blair, Elizabeth</td>
<td>24</td>
</tr>
<tr>
<td>Bonner, James</td>
<td>23</td>
</tr>
<tr>
<td>Bradford, Carol</td>
<td>27</td>
</tr>
<tr>
<td>Brock, Rachel</td>
<td>24</td>
</tr>
<tr>
<td>Calabrese, Luca</td>
<td>25</td>
</tr>
<tr>
<td>Califano, Joseph</td>
<td>27</td>
</tr>
<tr>
<td>Cernea, Claudio</td>
<td>25</td>
</tr>
<tr>
<td>Chard, Rachel</td>
<td>27</td>
</tr>
<tr>
<td>Chaturvedi, Pankaj</td>
<td>28</td>
</tr>
<tr>
<td>Comis, Robert</td>
<td>8, 23</td>
</tr>
<tr>
<td>Davis, Samantha</td>
<td>27</td>
</tr>
<tr>
<td>Day, Terry</td>
<td>29</td>
</tr>
<tr>
<td>Disa, Joseph</td>
<td>26</td>
</tr>
<tr>
<td>Duh, Quan-Yang</td>
<td>29</td>
</tr>
<tr>
<td>Dwivedi, Raghav</td>
<td>24</td>
</tr>
<tr>
<td>Ebrahimi, Ardalan</td>
<td>28</td>
</tr>
<tr>
<td>El-Naggar, Adel</td>
<td>7, 27</td>
</tr>
<tr>
<td>Eisele, David</td>
<td>28, 29</td>
</tr>
<tr>
<td>Ferris, Robert</td>
<td>27</td>
</tr>
<tr>
<td>Fingeret, Michelle</td>
<td>26</td>
</tr>
<tr>
<td>Forastiere, Arlene</td>
<td>24, 25</td>
</tr>
<tr>
<td>Funk, Gerry</td>
<td>26</td>
</tr>
<tr>
<td>Futran, Neal</td>
<td>26</td>
</tr>
<tr>
<td>Goldenberg, David</td>
<td>29</td>
</tr>
<tr>
<td>Gourin, Christine</td>
<td>29</td>
</tr>
<tr>
<td>Har-El, Gady</td>
<td>23</td>
</tr>
<tr>
<td>Hanasono, Matthew</td>
<td>26</td>
</tr>
<tr>
<td>Hanna, Ehab</td>
<td>26</td>
</tr>
<tr>
<td>Holsinger, Floyd &quot;Chris&quot;</td>
<td>23, 30</td>
</tr>
<tr>
<td>Howell, Lori</td>
<td>26</td>
</tr>
<tr>
<td>Iyer, N. Gopalakrishna</td>
<td>26</td>
</tr>
<tr>
<td>Jatana, Kris</td>
<td>27</td>
</tr>
<tr>
<td>Jordan, Wolf Oliver</td>
<td>25</td>
</tr>
<tr>
<td>Kannabiran, Vishnu</td>
<td>25</td>
</tr>
<tr>
<td>Kim, Min-Sik</td>
<td>26</td>
</tr>
<tr>
<td>Kim, Se-Heon</td>
<td>30</td>
</tr>
<tr>
<td>Kubicek, Gregory</td>
<td>24</td>
</tr>
<tr>
<td>Kupferman, Michael</td>
<td>28</td>
</tr>
<tr>
<td>Kutler, David</td>
<td>25</td>
</tr>
<tr>
<td>Lai, Stephen</td>
<td>27</td>
</tr>
<tr>
<td>Lamarre, Eric</td>
<td>24</td>
</tr>
<tr>
<td>Langerman, Alexander</td>
<td>24</td>
</tr>
<tr>
<td>Lewis, Carol</td>
<td>24</td>
</tr>
<tr>
<td>Lin, Derrick</td>
<td>26</td>
</tr>
<tr>
<td>Lydiatt, William</td>
<td>29</td>
</tr>
<tr>
<td>Maghami, Ellie</td>
<td>28, 29</td>
</tr>
<tr>
<td>Magnuson, Jeffrey</td>
<td>23</td>
</tr>
<tr>
<td>McHenry, Christopher</td>
<td>29</td>
</tr>
<tr>
<td>Mclver, Bryan</td>
<td>29</td>
</tr>
<tr>
<td>Mizrachi, Aviram</td>
<td>29</td>
</tr>
<tr>
<td>Moquete, Rachel</td>
<td>29</td>
</tr>
<tr>
<td>Mydlarz, Wojciech</td>
<td>25</td>
</tr>
<tr>
<td>Nathan, Cherie-Anne</td>
<td>27, 30</td>
</tr>
<tr>
<td>Orloff, Lisa</td>
<td>29</td>
</tr>
<tr>
<td>Patel, Kepal</td>
<td>25</td>
</tr>
<tr>
<td>Patel, Snehal</td>
<td>24</td>
</tr>
<tr>
<td>Patel, Urjeet</td>
<td>26</td>
</tr>
<tr>
<td>Pinho, Jorge</td>
<td>28</td>
</tr>
<tr>
<td>Pfister, David</td>
<td>24, 29</td>
</tr>
<tr>
<td>Ridge, John</td>
<td>6, 23, 24, 27, 28</td>
</tr>
<tr>
<td>Rivera-Serrano, Carlos</td>
<td>30</td>
</tr>
<tr>
<td>Rocco, James</td>
<td>27</td>
</tr>
<tr>
<td>Rosenthal, Eben</td>
<td>26</td>
</tr>
<tr>
<td>Samant, Sundeep</td>
<td>26</td>
</tr>
<tr>
<td>Schiff, Bradley</td>
<td>26</td>
</tr>
<tr>
<td>Schwartz, David</td>
<td>28</td>
</tr>
<tr>
<td>Shah, Manish</td>
<td>26, 29</td>
</tr>
<tr>
<td>Shaha, Ashok</td>
<td>29</td>
</tr>
<tr>
<td>Singh, Bhuvanesh</td>
<td>6, 23, 24</td>
</tr>
<tr>
<td>Smith, Richard</td>
<td>26</td>
</tr>
<tr>
<td>So, Yoon Kyoung</td>
<td>29</td>
</tr>
<tr>
<td>Spanos, William</td>
<td>27</td>
</tr>
<tr>
<td>Stepanek, Vanda</td>
<td>28</td>
</tr>
<tr>
<td>Sturgis, Erich</td>
<td>24</td>
</tr>
<tr>
<td>Surati, Millie</td>
<td>28</td>
</tr>
<tr>
<td>Teknos, Theodros</td>
<td>30</td>
</tr>
<tr>
<td>Trotti, Andy</td>
<td>10, 23, 24</td>
</tr>
<tr>
<td>Vermorken, Jan</td>
<td>25</td>
</tr>
<tr>
<td>Wansom, D</td>
<td>30</td>
</tr>
<tr>
<td>Wax, Mark</td>
<td>10, 26</td>
</tr>
<tr>
<td>Weber, Randal</td>
<td>23</td>
</tr>
<tr>
<td>White, Hillary</td>
<td>26, 30</td>
</tr>
<tr>
<td>Wolf, Gregory</td>
<td>25</td>
</tr>
<tr>
<td>Wong, Richard</td>
<td>26</td>
</tr>
<tr>
<td>Wu, Arthur</td>
<td>29</td>
</tr>
<tr>
<td>Yueh, Bevan</td>
<td>23, 29</td>
</tr>
<tr>
<td>Zafereo, Mark</td>
<td>30</td>
</tr>
</tbody>
</table>