

## Abstracts

### Podium: Head and Neck Surgery 3

Monday, June 8, 2015 @ 15:30-16:30

#### **Historical Compliance Rates for Providing Postoperative Radiotherapy in Oral Cavity Squamous Cell Carcinoma** – A. Hinthner, S. Nakoneshny, S. Chandarana, J. Dort, T.W. Matthews, Calgary, AB

##### Learning Objectives

1. To compare and assess historical compliance rates of PORT with current guidelines.
2. To understand the reasons for discrepancies between treatment delivered and guidelines.

**Introduction:** Oral cavity squamous cell carcinoma (OSCC) has a 5-year overall survival rate of 50-60%. In 2014 Alberta Health Services released guidelines for treating early and advanced-stage OSCC. Guideline recommendations for selecting patients that require post-operative radiotherapy (PORT) are dependent on the pathological features of the resected tumour. **Methods:** A retrospective analysis was performed to assess the historical selection of OSCC patients requiring PORT in a prospectively collected cohort of patients being treated with primary surgery at the Foothills Medical Centre from January 1, 2009 – December 31, 2013. The primary outcome was compliance with the 2014 AHS guideline recommendations for PORT. The secondary outcome was the selection of PORT according to published pathological indications of high, intermediate and low risk of recurrence. The discordant cases were reviewed to determine the reason for discordance. **Result:** Of the 199 patients, there were 32 discordant cases; 2 patients received PORT and 30 patients did not receive PORT contrary to AHS guideline recommendations. There were 24 and 6 patients who did not receive PORT despite high and intermediate risk for recurrence based on the surgical pathology reports, respectively. The reasons for discordance included: clinician decision (n=13), patient refusal (n=6), patient medically unfit/unable to tolerate PORT (n=6), patient lost to follow-up/unknown (n=1), and other (n=4). **Conclusion:** Incomplete compliance with the new AHS guidelines and published indications for PORT was observed. Non-compliance was associated with both modifiable and non-modifiable factors. Future work will explore the impact of non-compliance with PORT guidelines on survival and recurrence.

#### **Outcomes in Oropharyngeal SCC via PET Measured Tumor Burden and Glycolysis** – N. Moolman, R. Hart, M. Rigby, S. Burrell, N. Mooney, J. Trites, S.M. Taylor, Halifax, NS

##### Learning Objectives

1. Understand the utility of PET/CT in assessing total tumour volume in OPSCC
2. Understand the relationship between total tumour volume and outcomes in OPSCC
3. Understand the relationship between total lesion glycolysis and outcomes in OPSCC.

**Objectives:** This study seeks to define the relationship of total tumour volume (primary site plus associated lymphadenopathy), total lesion glycolysis and outcomes in oropharyngeal squamous cell carcinoma (OPSCC), using a new rapid assessment software technique in PET/CT scanning. **Methods:** 120 consecutive OPSCC patients that had pre-treatment PET/CT scans were retrospectively reviewed using a new rapid assessment software that allows for quick measurement of total tumour volume and total lesion glycolysis, including nodal disease. The results were compared to the clinical staging (TNM) and overall outcomes (persistence, recurrence and survival) in all patients with follow up over 1 year. **Results:** PET /CT volume averaging of tumour burden and glycolysis approximate TNM staging in terms of predicting persistence, recurrence and survival in OPSCC. Controlling for nodal volume, increasing primary tumour volume was associated with an increased hazard ratio of 1.057 of death due to disease for every 1 cm<sup>3</sup> increase in volume. This was statistically significant (p=0.009). **Conclusions:** PET/CT can provide a quick and reliable assessment of total tumour volume and total lesion glycolysis that may improve clinical staging and prognostication versus TNM staging alone.

#### **Overview of Laryngeal and Hypopharyngeal Cancer Surgery in Ontario (2003-2010)** – A. Eskander, J. Irish, R. Gilbert, P. Gullane, D. Brown, J. De Almeida, D. Urbach, D. Goldstein, Toronto, ON

## Learning Objectives

1. Get an appreciation of the use of administrative data in health services research.
2. Review variations in incidence, resection rate and adjunct procedures in a recent cohort of laryngeal / hypopharyngeal cancer patients in Ontario.

**Objective:** The primary objective of this study is to describe variations in incidence rates, resections rates, and type of surgical resection for patients diagnosed with laryngeal / hypopharyngeal cancer (LHC) in Ontario.

**Methods:** All LHC cases in Ontario (2003-2010) were identified from the Ontario Cancer Registry (n=3,034). Variations in incidence rates, resection rates, and type of surgical resection were compared by sex, age group, neighbourhood income, community population, health region, and physician specialty. **Results:** Eight-year incidence rates per 100,000 vary significantly by sex (male: 52.7, female: 8.6), age (18-54 years: 7.8, 75+ years: 104.4), neighborhood income (lowest quintile: 36.0, highest quintile: 21.5), and community size (cities with a population greater than 1.5 million: 23.8, cities with a population of less than 100,000: 34.3). Females, the elderly (75+ years), those in the higher income quintiles and those living in larger communities were significantly less likely to receive a laryngectomy procedure. Large differences in incidence and resection rates were observed by health region. Otolaryngologists provide the majority of LHC surgical care treating 90.4% of patients in our cohort. **Conclusions:** LHC incidence rates vary by sex, age, neighbourhood income, community size, and health region. Resection rates vary by age, gender and health region. These disparities warrant further evaluation to improve the quality of delivered care in Ontario. Otolaryngologists provide the majority of LHC surgical care.

**Patterns of Failure in Laryngeal Cancer – Glottis vs Supraglottic** – T.H. Low, D. Yeh, T. Zhang, V. Venkatasan, K. Fung, D. MacNeil, A. Nichols, J. Yoo, London, ON

## Learning Objectives

1. Understand the differences in the pattern of failure in patients with glottic and supraglottic SCC.
2. Explore the reason for poor outcomes in patients with supraglottic SCC.

**Background:** Squamous cell carcinoma (SCC) arising from the supraglottic region is known to have poor outcomes when compared to the glottic region. Whilst many papers have investigated the tumour behaviour and tumour biology of these tumours; there is still a lack of data on the pattern of failures for these tumours to guide treatment decision. **Method:** This is a retrospective chart review of patients treated at the London Cancer Centre, London Health Sciences between June, 2002 to December, 2013. The survival outcomes were analysed with Kaplan Meier method and differences analysed with log-rank test. **Results** During this period, 414 patients with glottic (n= 298) and supraglottic (n=126) SCC were treated. The mean ages were 65.9±12.9 and 64.9±10.7 years respectively. There were significant differences in the 5 year overall survival and disease free survival between the patients with glottic and supraglottic SCC (82% vs 47%, p<0.001 and 90% vs 53%, p=0.003). These differences were associated with poor distant control (98% vs 63%, p<0.001). The local and regional control for both groups were comparable (78% vs 75%, p=0.713 and 91% vs 83%, p=0.294). Distant failure was responsible for 58% of all death for patients with supraglottic SCC compared to 9.5% for patients with glottic SCC (p<0.001). Poor distant control was also associated with increasing N-stage (p<0.001). **Conclusion:** The survival of patients with supraglottic SCC was worse compared to those with glottic SCC. The difference in survival was largely due to increased distant failure in the supraglottic group. This result has implication for consideration for systemic treatment of patients with supraglottic SCC.

**T3 Laryngeal Cancer Survival Rates: Radiation/Chemoradiation versus Total Laryngectomy** – P. Kerr, Winnipeg, MB, P. Dziegielewski, Florida, H. Seikaly, Edmonton, AB, K. Higgins, Toronto, ON, P. Lambert, Winnipeg, MB

## Learning Objectives

1. Understand survival rates for T3 laryngeal cancer treated with organ preservation protocols vs total laryngectomy.
2. Understand organ preservation rates for T3 laryngeal cancer treated with radiation or chemoradiation

**Objectives:** Organ preservation protocols are standard treatment for the majority of patients with stage 3 and 4 laryngeal cancer. However, there are concerns that treatment of locally advanced tumors with radiation /

chemoradiation may not result in acceptable organ preservation rates and may ultimately compromise survival. Our goal is to assess the oncologic outcome of radiation/chemoradiation versus total laryngectomy for T3 laryngeal carcinoma. **Methods:** A retrospective consecutive cohort of T3 laryngeal cancer patients treated with radiation or concomitant chemoradiation were compared to a cohort of patients treated with total laryngectomy. **Settings:** Three Canadian academic tertiary care referral centers; CancerCare MB, Cross Cancer Institute (Edmonton), Sunnybrook Hospital (Toronto). **Results:** A total of 242 patients met inclusion criteria. 149 patients were treated with radiation or concomitant chemoradiation, and 93 patients underwent total laryngectomy. Multivariate analysis confirmed that treatment was an independent predictor of overall survival. At 5 years, overall survival after total laryngectomy was 65 +/- 5% vs 46 +/- 5 after organ preservation ( $p < 0.01$ ). There was also a trend toward better 5 year disease specific survival (74 +/- 5 vs 61 +/- 5%;  $p < 0.10$ ). In the cohort receiving organ preservation treatment, the laryngeal preservation rate was 70% and laryngectomy free survival rate was 34% after 5 years. **Conclusions:** Organ preservation for T3 laryngeal cancer allows for reasonable rates of laryngeal preservation. However, overall survival may be compromised when compared to total laryngectomy. Total laryngectomy remains an acceptable option in the management of patients with T3 laryngeal cancer.

**Validation of Metabolic Tumor Volume as a Prognostic Factor for Oral Cavity Squamous Cell Carcinoma treated with Primary Surgery** – H. Zhang, H. Seikaly, J. Abele, J. R. Harris, V. Biron, D. O'Connell, Edmonton, AB

#### Learning Objectives

1. To review metabolic tumour volume and its role in head and neck cancer
2. To discuss value of metabolic tumour volume in oral cavity squamous cell carcinoma patients treated with primary surgery
3. To discuss implications and clinical applications of metabolic tumour volume on treatment of head and neck cancer patients.

**Background:** Metabolic tumor volume (MTV) obtained from pre-treatment  $^{18}\text{F}$ -fluorodeoxydeglucose positron emission tomography with computed tomography (PET-CT) has been previously shown to be a prognostic factor for oral cavity squamous cell carcinoma (OCSCC) treated with primary surgery. Despite the promise of MTV as a risk-stratifying marker, the retrospective design of the initial study limits its generalizability. **Purpose:** To validate MTV as a prognostic factor for OCSCC treated with primary surgery. **Methods:** The validation data set consisted of 40 patients treated for OCSCC between 2008-2012 in a different institution than the original group. MTV and maximum standardized uptake value ( $\text{SUV}_{\text{max}}$ ) value was delineated from pre-treatment PET-CT scans using Segami Oasis software (Columbus, OH). Validation analysis was conducted on the validation data set alone. All other analysis was done using the total data set (120 patients) to increase statistical power. **Results:** Similar to the previous study, an increase in combined MTV of 17.5 mL (difference between the top and bottom third percentile) was associated with a 10.8 fold increase in risk of disease recurrence ( $p < 0.001$ ) and a 10.5 fold increase in the risk of death ( $p < 0.05$ ). Combined  $\text{SUV}_{\text{max}}$  failed to predict both overall and disease-free survival ( $\text{HR} = 1.0$ ,  $p > 0.05$ ). Increase in the MTV of the primary tumor was associated with an increase in the risk of recurrence and death ( $p < 0.05$ ), while increase in the MTV of the locoregional neck metastasis was not ( $p > 0.05$ ). **Conclusion:** This study validates MTV as an independent prognostic factor for OCSCC treated with primary surgery. Patients with higher MTV values should be further evaluated for the possibility of using intensified treatment strategies to improve survival after OCSCC treatment.

**Laryngeal Recurrence Sites in Patients Previously Treated with Transoral Laser Microsurgery for Squamous Cell Carcinoma** – P. Howich, M. Rigby, J. Melong, M. Bullock, R. Hart, J. Trites, S.M. Taylor, Halifax, NS

Abstract TBA

#### How I Do It

**An Innovative Transoral Laser Microsurgery/PET Hybrid Approach in the Management of the Unknown Primary** – J. Melong, M. Rigby, R. Hart, J. Trites, K. Delovino, Halifax, NS

## Learning Objectives

1. To discuss some of the controversies in managing the unknown primary of the head and neck.
2. To introduce a new hybrid technique in which preoperative PET scanning is used to plan a transoral surgical approach to the unknown primary.
3. To assess outcomes using this new innovative approach with specific consideration of the changes in adjuvant treatment following surgery.

**Objectives:** To outline a newly described hybrid approach to the unknown primary of the neck. **Methods:** A prospective analysis of 10 patients who had this newly described hybrid approach utilized was performed. All patients had preoperative PET scanning for unknown primary tumors of the neck followed by a directed transoral laser microsurgical resection of the primary tumor with neck dissection. **Results:** Ten of 10 patients (100 percent) had the location of their primary tumor identified and resected using a transoral microsurgical approach. All patients had concurrent surgical management of the neck via a selective neck dissection. The postoperative adjuvant management was significantly altered in the majority of patients to date. **Conclusion:** A hybrid approach utilizing a preoperative PET scan with directed transoral microsurgical identification and resection of the primary tumor is an effective newly described technique in managing the unknown primary of the neck. We feel strongly this approach potentially can lead to de-escalation of treatment with limitation of morbidity in the era of HPV positive head and neck cancer.

**The Role of Primary Surgery in the Treatment of Advanced Oropharyngeal Cancer** – H. Seikaly, V. Biron, H. Zhang, D. O’Connell, D. Cote, K. Ansari, L. Puttagunta, J. Harris, Edmonton, AB

## Learning Objectives

1. Understand the role of surgery in advanced oropharyngeal cancer treatment.
2. Appreciate the impact of P16 status on survival outcomes in oropharyngeal cancer.
3. Appreciate the impact of smoking on survival outcomes in oropharyngeal cancer.

**Background:** The treatment paradigms for advanced oropharyngeal squamous cell carcinoma (OPSCC) are controversial and continuously evolving. Treatment guidelines suggest that primary surgery with adjunctive therapy or chemoradiation are acceptable treatment regimens, but there are no definitive literature comparing the survival outcomes of these widely varied approaches. The purpose of this study was to compare differences in survival of patients with advanced stage OPSCC according to surgical and non-surgical treatments, when stratified by smoking and P16 status. **Study design:** This is a prospective longitudinal population-based study **Methods:** All patients diagnosed with advanced OPSCC were included. Patients were classified as smokers if they had a tobacco use history  $\geq 10$  pack years and all patients with advanced stage OPSCC had their p16 status determined through analysis of their preserved tissue. **Results:** There was no significant DSS difference between combined modality treatment groups in non-smokers that had p16 positive cancers but in smokers with p16 positive cancers the DSS for S+CRT was significantly higher than CRT. Patients who had p16 negative cancers that had highest DSS when treated with S+RT/CRT. Multivariate Cox regression analysis showed that increasing ECOG score, smoking, p16 status, higher stage, and treatment with surgery protocols were significant determinants of survival. **Conclusions:** S+CRT offers the highest survival advantage in smokers with p16 positive cancers while all combined treatment modalities offer equivalent survival outcome for patients who are non-smokers with p16 positive cancers. S+RT/CRT offers a significant survival advantage over CRT in patients with p16 negative cancers.

**Metabolic Tumor Volume as a Prognostic Indicator in Oropharyngeal Squamous Cell Carcinoma Treated with Primary Surgery** – T. Cooper, H. Zhang, H. Seikaly, J. Abele, C. Jeffery, V. Biron, D. O’Connell, Edmonton, AB

## Learning Objectives

The audience will be able to:

1. Evaluate the use of PET-CT imaging to characterize the metabolically active tumor burden in a patient through the measurement of MTV.
2. Identify MTV as a prognostic factor independent of p16 and TNM-staging in OPSCC patients treated with primary surgery.
3. Consider the utility of MTV data in counselling OPSCC patients regarding prognosis.

**Background:**  $^{18}\text{F}$ -fluorodeoxyglucose positron emission tomography with computed tomography (PET-CT) plays a major role in the management of oropharyngeal squamous cell carcinoma (OPSCC) patients. Metabolic tumour volume (MTV) has recently been validated as an independent prognostic factor in head and neck cancer patients treated with primary chemoradiotherapy. However, its role in OPSCC patients has not been studied in a dedicated surgical cohort. **Objective:** To evaluate the prognostic value of MTV in OPSCC patients treated with primary surgery. **Methods:** Population-based cohort study of patients diagnosed with OPSCC and treated with curative intent with primary surgery from 2009 to 2013 in Alberta. All included patients underwent full body PET-CT prior to curative surgical resection. Demographic and survival data were collected. MTV was calculated using Segami Oasis software (Columbus, OH). MTV was divided into intertertile thirds prior to statistical analysis using Kaplan-Meier method and Cox-regression. **Results:** Forty-eight patients were analyzed with a mean age 58.3 years. Combined MTV (primary tumour and locoregional metastasis) had an overall 5-year survival of 80%, 73%, and 23% divided by MTV tertiles respectively ( $p=0.02$ ). After accounting for covariates, Cox-regression showed an increase in combined MTV of 14.7 mL (difference between 33<sup>rd</sup> and 67<sup>th</sup> percentile) was associated with a 1.4 increase in risk of death ( $p<0.05$ ) and a 1.5 increase in risk of locoregional disease recurrence ( $p<0.05$ ). **Conclusion:** This is the first study to show that combined MTV is an independent prognostic factor for OPSCC after accounting for TNM-staging and p16 status in a dedicated surgical subset.