Outcomes Following Neoadjuvant Immunotherapy for Oral Cavity Cancer: A Propensity Score Matched Analysis of the National Cancer Database

Daniel R. S. Habib BA[1], Matthew Shou BA[1], Christopher Naranjo BA[1], Feyisayo O. Adegboye BA[2], Ramez H. Philips MD[3], Patrick Tassone MD MS[4], Alexander J. Langerman MD SM[2], Aimal Khan MD[2], Michael C. Topf MD MSCI[2]

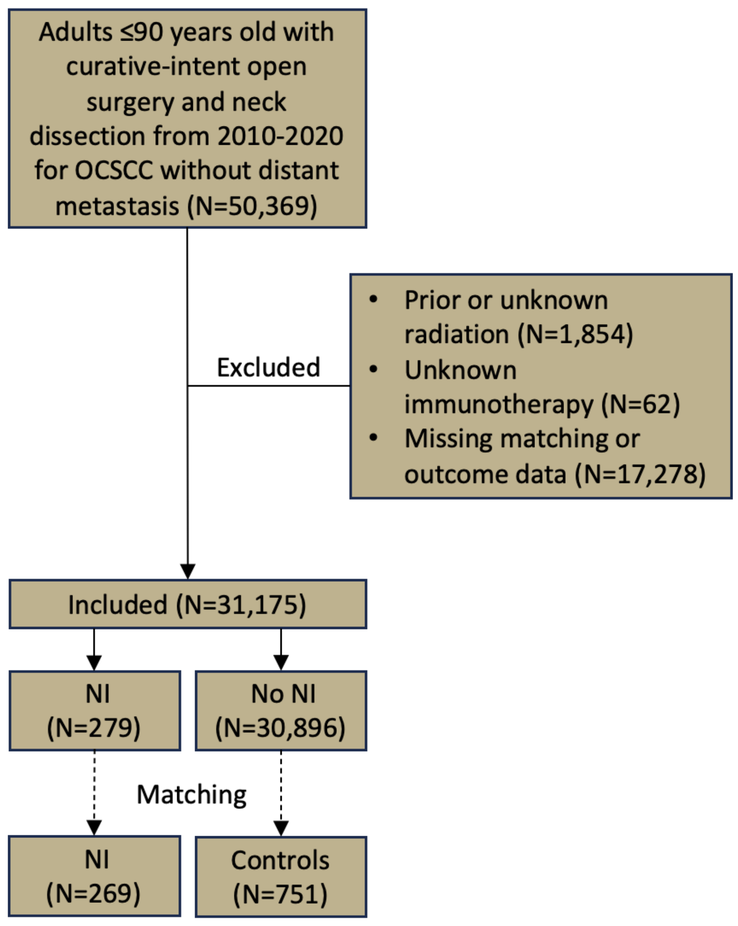
[1] Vanderbilt University School of Medicine, [2] Vanderbilt University Medical Center, [3] University of Chicago Medicine, [4] University of Missouri Health Care

Introduction

- There has been recent interest in the use of neoadjuvant immunotherapy (NI) prior to definitive resection of oral cavity squamous cell carcinoma (OCSCC).[1,2]
- There remains limited understanding of the effect of NI on surgical outcomes and overall survival (OS).[2]
- **Objective**: Determine associations between NI and postoperative outcomes as well as OS following OCSCC resection.

Population / Design

- **Population:** National Cancer Database (NCDB) OCSCC surgery patients
- **Statistical Analysis**:
  - Chi-square / Wilcoxon rank-sum tests of postoperative outcomes by NI
  - 1:3 propensity score matching, Kaplan-Meier survival analysis, and Cox proportional-hazards analysis of patients with and without NI
- **Covariates**: Age, sex, race, insurance, treatment facility type and case volume, Charlson-Deyo Comorbidity Index, clinical T/N stage, neoadjuvant/adjuvant chemotherapy, adjuvant radiation



Main Outcomes / Measures

- **Postoperative outcomes**:
  - 30-day mortality
  - Unplanned 30-day readmission
  - Hospital length of stay (LOS)
  - Surgical margin status
  - Time to postoperative radiation
- Overall survival (OS)

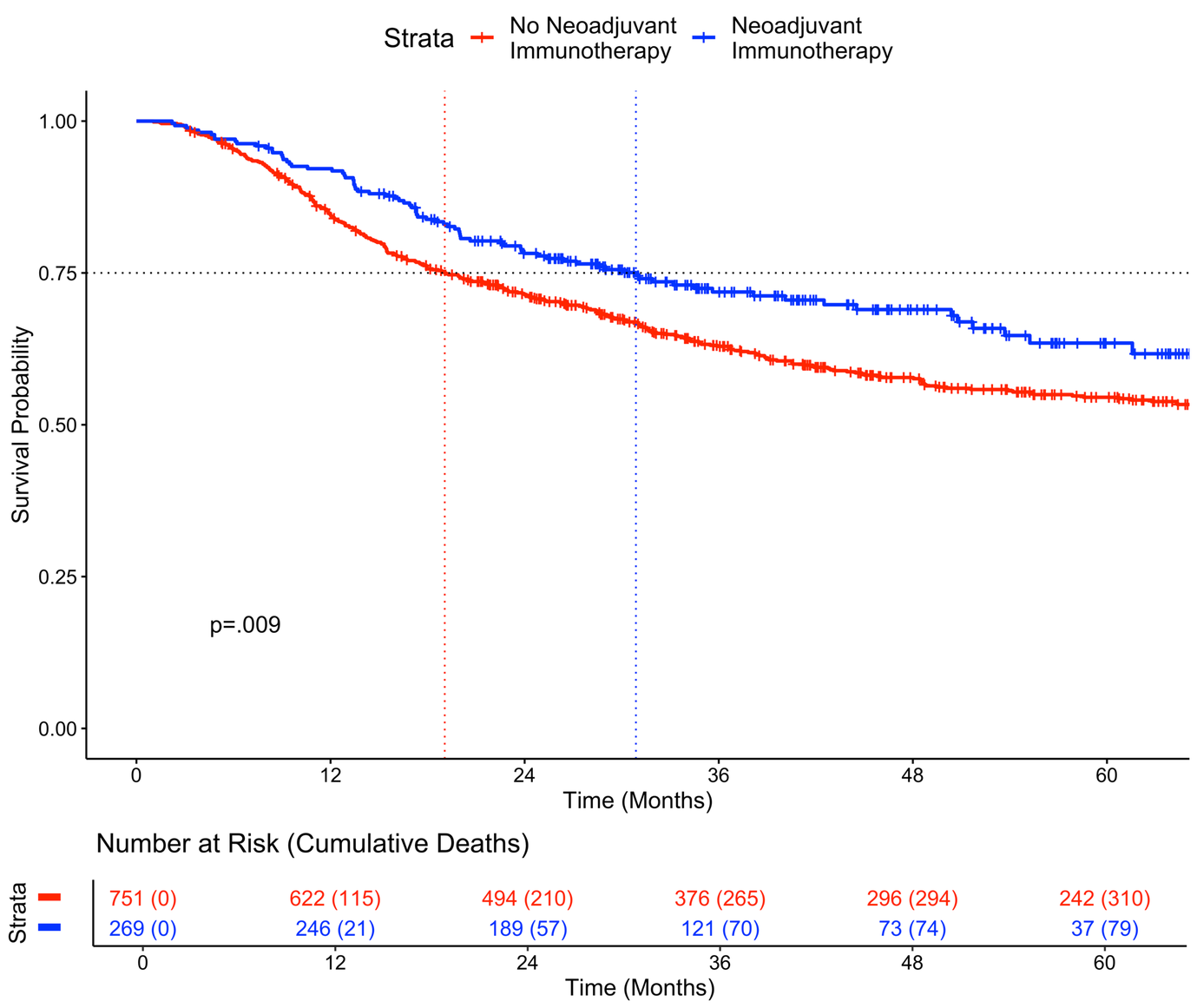
Results

Table 1. Matched Cohort Postoperative Outcomes by Neoadjuvant Immunotherapy

Outcome	NI (N=269)	No NI (N=751)	P Value
30-Day Mortality	3 (1.1%)	8 (1.1%)	1.000
Unplanned 30-Day Readmission	10 (3.7%)	47 (6.3%)	.120
Hospital LOS (days), median [IQR]	8 [6-11]	8 [6-12]	.861
Positive Margin	32 (11.9%)	97 (12.9%)	.666
Days from Surgery to Postoperative Radiation, median [IQR]	49 [42-61]	51 [42-63]	.594

No significant differences in surgical outcomes, positive margins, and time to postoperative radiation

Figure 1. Kaplan-Meier Survival Analysis by Neoadjuvant Immunotherapy



NI was associated with improved OS on Kaplan-Meier analysis.

Table 2. Multivariable Cox Proportional-Hazards Analysis by Neoadjuvant Immunotherapy

Variable	HR	95% CI	P Value
Age	**1.02**	**1.01-1.03**	**.004**
Female Sex (vs Male)	0.85	0.69-1.04	.122
Race (vs White)			
Black	1.50	0.96-2.36	.078
Other	1.19	0.76-1.85	.451
Insurance			
Private/Managed Care	0.86	0.47-1.55	.609
Medicaid	1.05	0.56-1.99	.878
Medicare/Other Government	1.03	0.55-1.91	.935
Research/Academic Facility	**0.68**	**0.48-0.99**	**.041**
Top Quartile Facility Case Volume	0.94	0.74-1.21	.648
Charlson-Deyo Comorbidity Index (vs 0)			
1	1.26	0.99-1.61	.056
2+	1.38	1.00-1.92	.054
Clinical T Stage (vs T1)			
T2	1.00	0.54-1.85	.993
T3	1.59	0.86-2.96	.140
T4	1.67	0.93-3.01	.086
Clinical N Stage (vs N0)			
N1	**1.51**	**1.12-2.05**	**.007**
N2/3	**1.81**	**1.42-2.32**	**<.001**
Neoadjuvant Immunotherapy	**0.68**	**0.53-0.86**	**.002**
Neoadjuvant Chemotherapy	**1.64**	**1.27-2.13**	**<.001**
Adjuvant Chemotherapy	**0.65**	**0.51-0.82**	**<.001**
Adjuvant Radiation	**1.52**	**1.20-1.93**	**.001**

NI was independently associated with improved OS after controlling for matching variables.

Discussion / Conclusion

- **Limitations**: Lack of specific adverse event data in NCDB and potential clinical trial enrollment bias
- NI does not significantly impact postoperative outcomes but is associated with improved OS.
- Though not yet standard of care, the OS benefit of NI may facilitate more effective individualized cancer care.

References

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2. Philips R, Alnemri A, Amin D, et al. Effect of preoperative programmed death-1 or programmed death ligand-1 immune check point inhibition on complications after surgery for primary head and neck cancer. *Cancer*. 2024;130(6):863-875. doi:10.1002/cncr.35045

Daniel Roy Sadek Habib
Website: danielrshabib.github.io
✉ Daniel.r.habib@Vanderbilt.edu
𝕏 @danielrshabib

VANDERBILT UNIVERSITY MEDICAL CENTER

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