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

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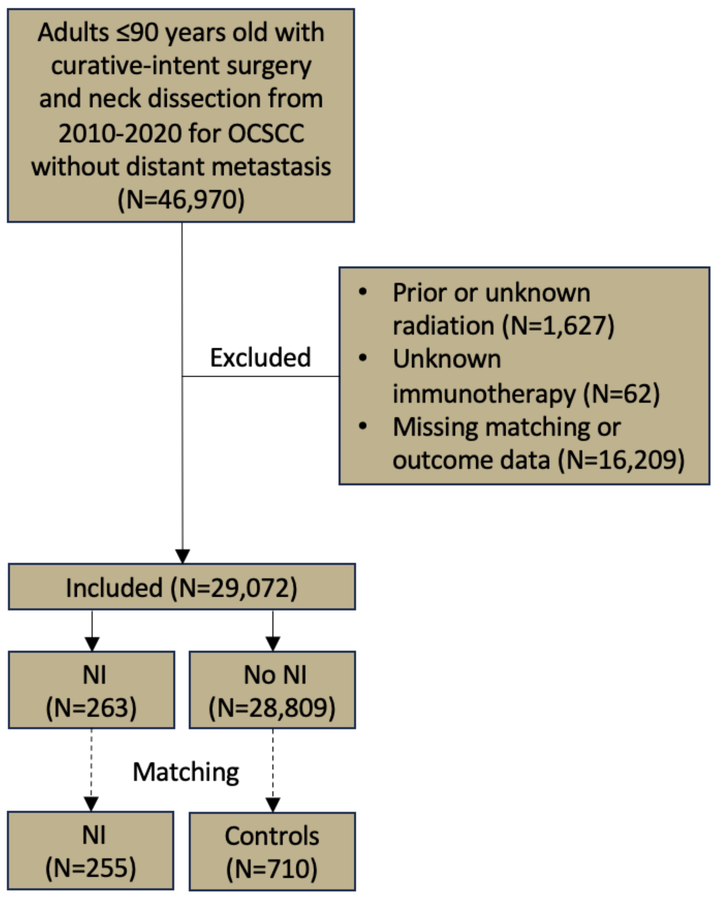
Introduction

- 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, postoperative radiation



Main Outcomes / Measures

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

Results

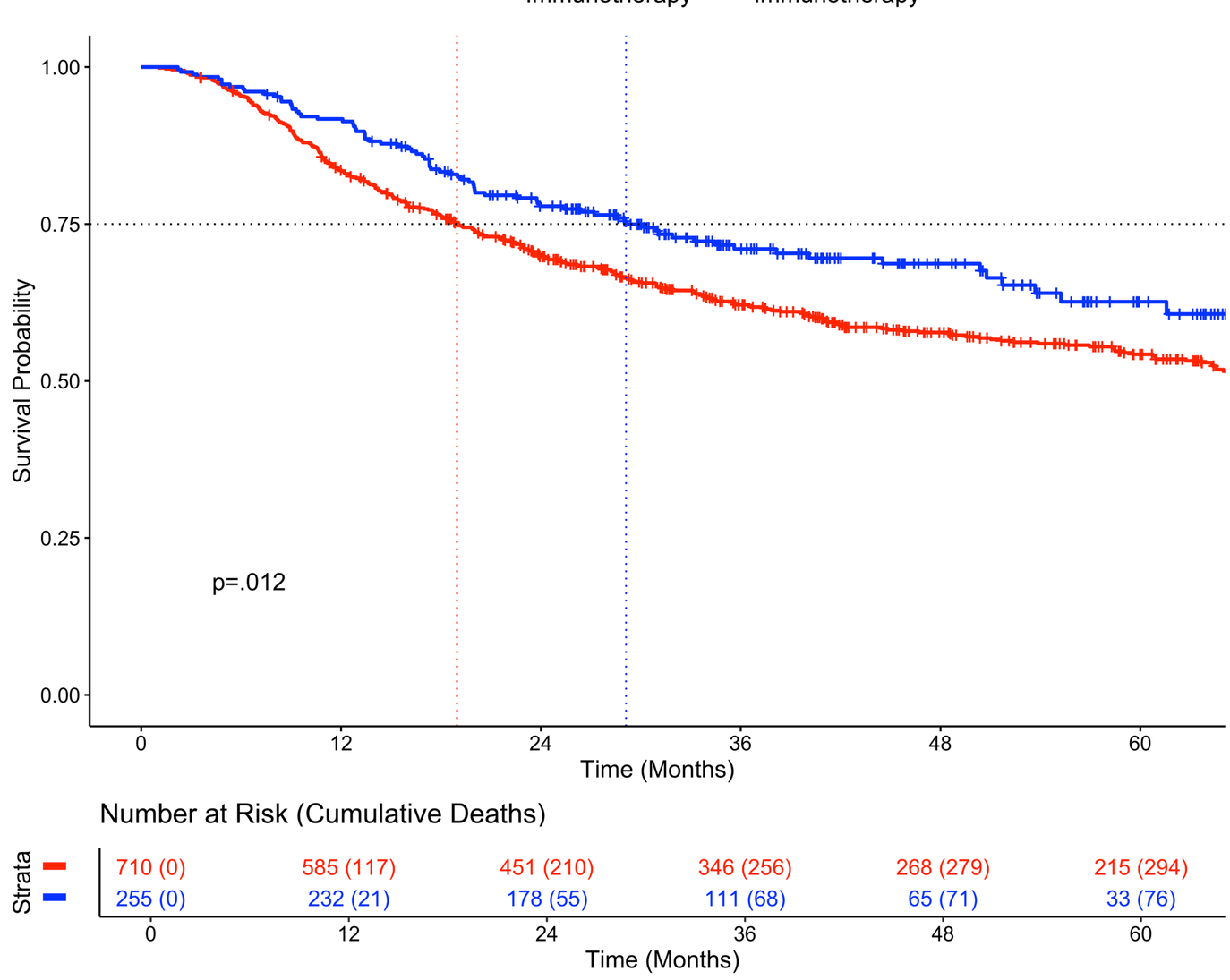
Table 1. Matched Cohort Postoperative Outcomes by Neoadjuvant Immunotherapy

Outcome	NI (N=255)	No NI (N=710)	P Value
30-Day Mortality	3 (1.2%)	6 (0.8%)	.705
Unplanned 30-Day Readmission	11 (4.3%)	38 (5.4%)	.517
Hospital LOS (days), median [IQR]	8 [6-11]	8 [6-12]	.994
Positive Margin	27 (10.6%)	103 (14.5%)	.116
Days from Surgery to Postoperative Radiation, median [IQR]	49 [42-61]	52 [42-62]	.296

IQR: Interquartile range

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	Hazard Ratio (95% Confidence Interval)	P Value
Age	1.01 (1.00-1.02)	.113
Female Sex (vs Male)	0.94 (0.77-1.16)	.585
Race (vs White)		
Black	1.18 (0.76-1.86)	.462
Other	0.88 (0.48-1.62)	.689
Insurance		
Private/Managed Care	0.78 (0.45-1.33)	.356
Medicaid	1.31 (0.72-2.37)	.374
Medicare/Other Government	1.15 (0.65-2.02)	.629
Research/Academic Facility	0.98 (0.67-1.43)	.918
Top Quartile Facility Case Volume	1.18 (0.93-1.49)	.162
Charlson-Deyo Comorbidity Index (vs 0)		
1	1.2 (0.94-1.54)	.149
2+	1.35 (0.98-1.84)	.064
Clinical T Stage (vs cT1)		
cT2	0.81 (0.46-1.41)	.456
cT3	1.04 (0.58-1.85)	.901
cT4	1.19 (0.70-2.02)	.516
Clinical N Stage (vs cN0)		
cN1	1.22 (0.89-1.66)	.212
cN2-cN3	**1.64 (1.30-2.09)**	**<.001**
Neoadjuvant Immunotherapy	**0.66 (0.51-0.84)**	**.001**
Neoadjuvant Chemotherapy	**1.44 (1.12-1.85)**	**.005**
Adjuvant Chemotherapy	**0.66 (0.51-0.84)**	**.001**
Postoperative Radiation	**1.34 (1.04-1.72)**	**.021**

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

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