



The Role of Tongue Carcinoma in Mediating Age-Associated Differences in Oral Cancer Survival

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Background

- Young patients (<40) represent a small subset (~5%) of oral squamous cell carcinoma (OCSCC) patients.
- The impact of young age on prognosis in OCSCC is controversial.
- We explored the possibility that young OCSCC patients are a heterogeneous group, composed of multiple age groups distinguished by the proportion of tongue cancer cases.

Hypothesis & Objectives

- Hypothesis: Among young (<40) OCSCC patients, age groups with higher proportions of tongue cancer experience worse disease-specific survival (DSS).
- Objective 1: Compare the proportion of tongue cancer cases for OCSCC patients of different age groups.
- Objective 2: Assess how the proportion of tongue cancer cases in each age group has changed over time.
- Objective 3: Compare the DSS of different age groups, adjusting for tongue cancer.

Patients & Methods

- The SEER 9 database (November 2018 submission) was used to identify patients with OCSCC diagnosed between 1975-2016.
- Exclusion criteria: Unknown age, stage or survival time.
- The proportion of tongue cancer cases in various age groups were compared using the χ^2 test.
- DSS curves of various age groups were graphed using K-M analysis, and compared using the log-rank test.
- Cox proportional hazards model was constructed to assess impact of age on DSS after adjusting for tongue cancer and stage.

Figure 1. Proportion of tongue SCC cases among OCSCC patients, by age group and by year of diagnosis in fourteen-year intervals.

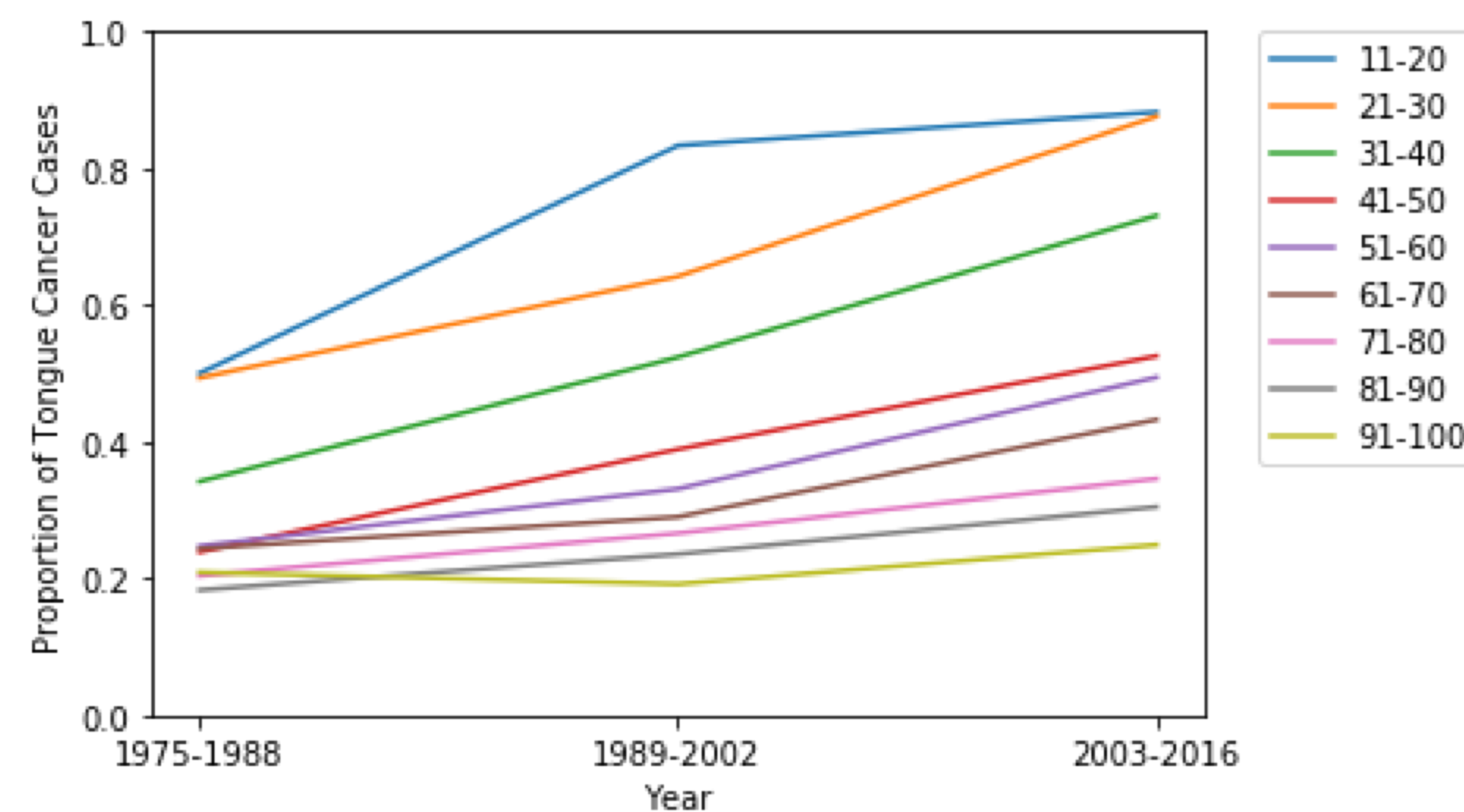
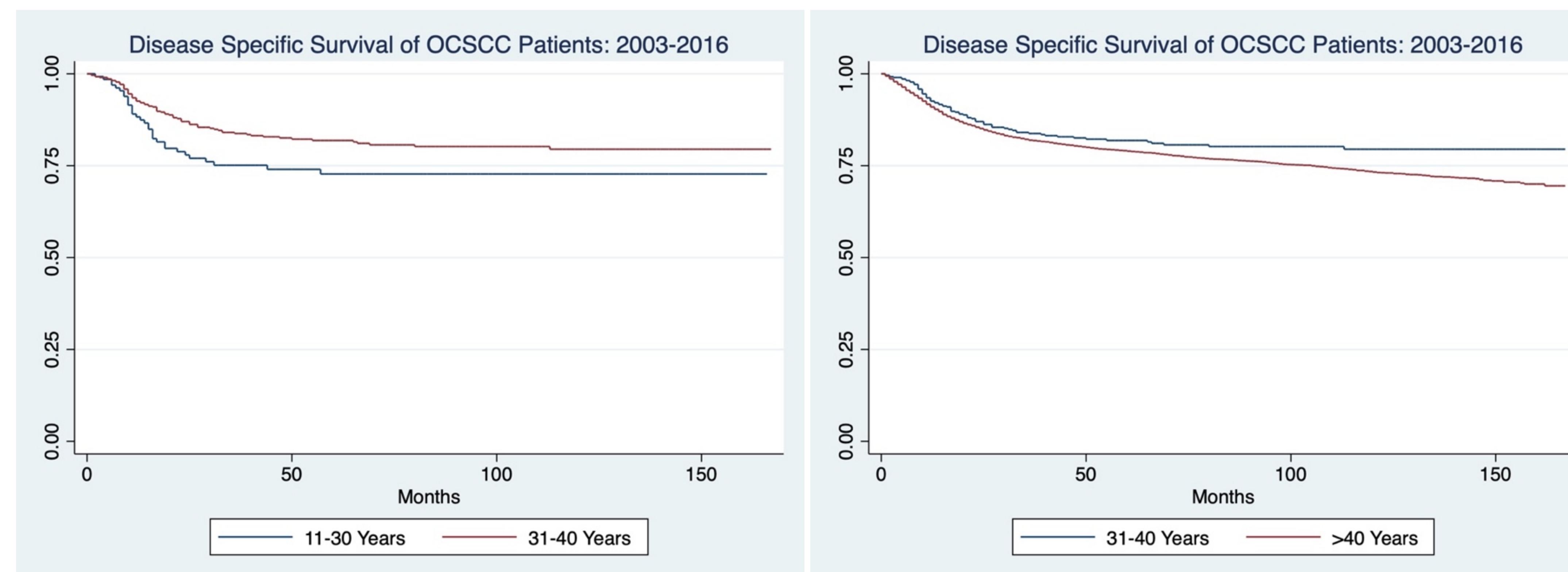


Figure 2. Disease-specific survival for OCSCC patients diagnosed between 2003-2016, comparing (a) 11-30 and 31-40 year old patients (b) 31-40 and >40 year old patients.



Results

- 48,660 patients with OCSCC identified in SEER
- All age groups between 11-90 had significantly higher proportions of tongue cancer in 2003-2016 than 1975-1988 (**Fig.1**).
- Patients ≤ 10 excluded due to low numbers.
- Between 2003-2016:
 - 11-20 and 21-30 age groups had similar proportions of tongue cancer, so were treated as a single group.
 - 11-30 age group had a significantly higher proportion of tongue cases than the 31-40 age group (88 vs. 74%, $p < .001$).
 - All age groups <40 had a significantly higher proportion of tongue cases than the >40 cohort.
 - 11-30 age group had significantly lower DSS than the 31-40 age group ($p = .04$) (**Fig. 2a**).
 - After adjusting for subsite (tongue vs. non-tongue), age was not significant ($p = .09$) while subsite was associated with greater hazard ($p = .03$). Subsite remained significant after adjusting for stage.
 - 31-40 age group had significantly higher DSS than the >40 cohort ($p = .03$)
 - After adjusting for subsite, belonging to the 31-40 age group was even more protective ($p = .01$).

Conclusions

- Tongue cancer accounts for an increasing share of OCSCC cases across age groups. This increase is most pronounced among patients <40.
- There are multiple age groups within the young OCSCC cohort distinguished by the proportion of tongue cases.
- Worse outcomes for 11-30 year old patients compared to 31-40 year old patients is due to the higher proportion of tongue cancer in this age group.
- The cause of this age-related variation in tongue cancer frequency remains to be determined.