# Squamous cell carcinoma of the oral tongue: Age-specific presentation and prognosis in the United States.

Valerie A. Fritsch, MD, Eric J. Lentsch, MD

*Department of Otolaryngology – Head and Neck Surgery, Medical University of South Carolina*

## Introduction

The epidemiology of oral tongue squamous cell carcinoma (SCC) is changing, as there has been a marked increase in its incidence among young patients, females, and non-smokers in recent years.

The etiology underlying this demographic shift still remains essentially unknown, and associated clinical implications have not been previously reported in a large series.

Our objective was to determine if there are age-related differences in presentation, survival, and prognostic indicators in a recent population-based cohort with oral tongue SCC.

## Methods and Materials

- All cases of OT SCC diagnosed between the years 2000-2008 were extracted from the Surveillance Epidemiology and End Results database.
- Patients were categorized into age groups by decade, i.e. <30 years old (yo), 30-39 yo, 40-49 yo, etc.
- Clinicopathologic data, initial course of treatment, 5-year disease-specific survival (DSS), and prognostic factors were compared between age groups.
- Survival was assessed using the Kaplan-Meier method, as well as multivariable regression analysis.

## Results

- A total of 5,980 cases were included in this cohort.
- Overall, median age at diagnosis was 61years.
- More than 60% of patients were male in the middle-age groups (40s, 50s, 60s); however, gender distribution was nearly even in the youngest and oldest age groups (p<0.001). [Table 1]
- Patients <40yo were more likely to have high grade tumors (i.e. poorly- or un-differentiated), p<0.001. [Table1]
- There was an inverse relationship between age at diagnosis and stage. Patients in the <30 yo group were the most likely to be diagnosed at an advanced stage (i.e. stage III or IV); and those in the 60s and 70s yo group were most likely to be diagnosed at an early stage (i.e. stage I or II), p=0.0001. [Figure 1a]
- When T- and N-stage were analyzed separately, there were no age-related differences in regard to T-stage; however, greater N-stage was significantly associated with younger age (p<0.001). [Fig 1b]
- Thirty-six percent of the <30yo age group presented with at least N1 disease, vs. <19% in the >80yo group (p<0.001); and the proportion of N-positive patients decreased gradually with each interval increase in age decade. [Fig 2]
- There was no age related difference in regard to disease specific survival on multivariable analysis. [Fig 3, Table 1]

Table 1. **Gender and Tumor Histology Distribution by Age**

| AGE (yrs) | <29 | 30-39 | 40-49 | 50-59 | 60-69 | 70-79 | 80-89 | p-value |
|---|---|---|---|---|---|---|---|---|
| | % | % | % | % | % | % | % | (k-wallis) |
| FEMALE | 44.6 | 46.1 | 39.2 | 37.0 | 37.6 | 47.5 | 60.2 | <0.001 |
| HISTOLOGY | | | | | | | | |
| Well to Moderately differentiated | 76.9 | 78.1 | 83.2 | 83.3 | 82.7 | 83.2 | 84.8 | <0.001 |
| Poorly differentiated or undifferentiated | 23.1 | 21.9 | 16.8 | 16.7 | 17.3 | 16.8 | 15.2 | |

Figure 1a. Overall Stage **Distribution by Age**

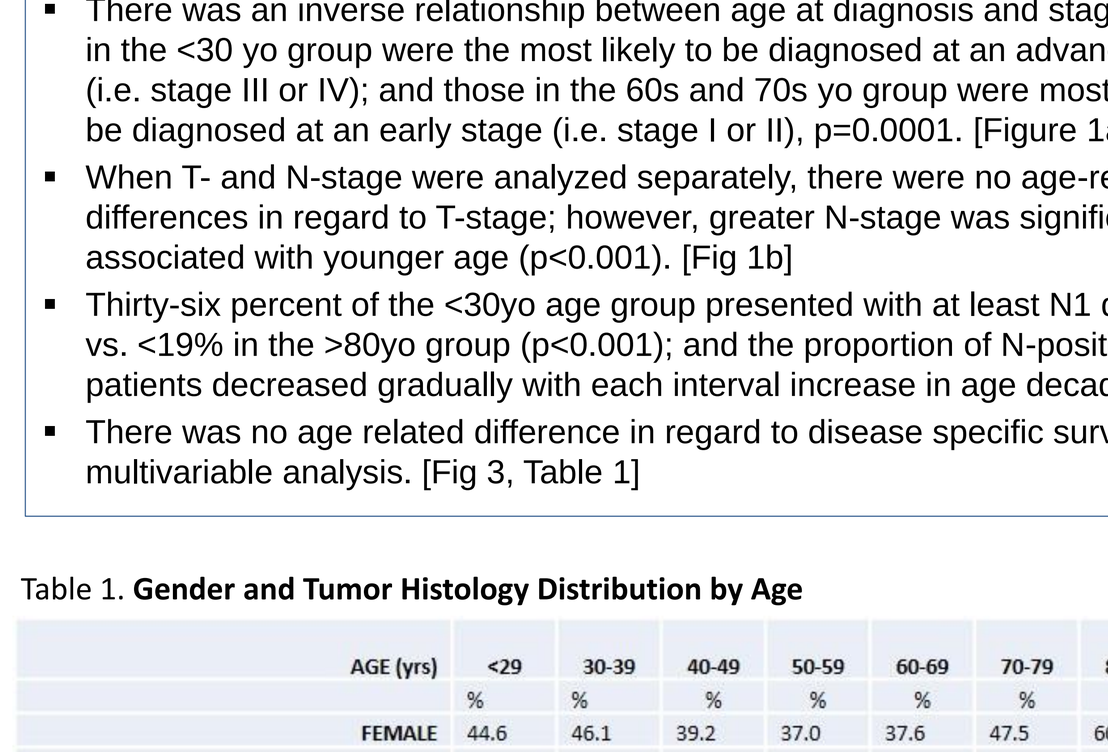


Figure 1b. **T and N Stage Distribution by Age**

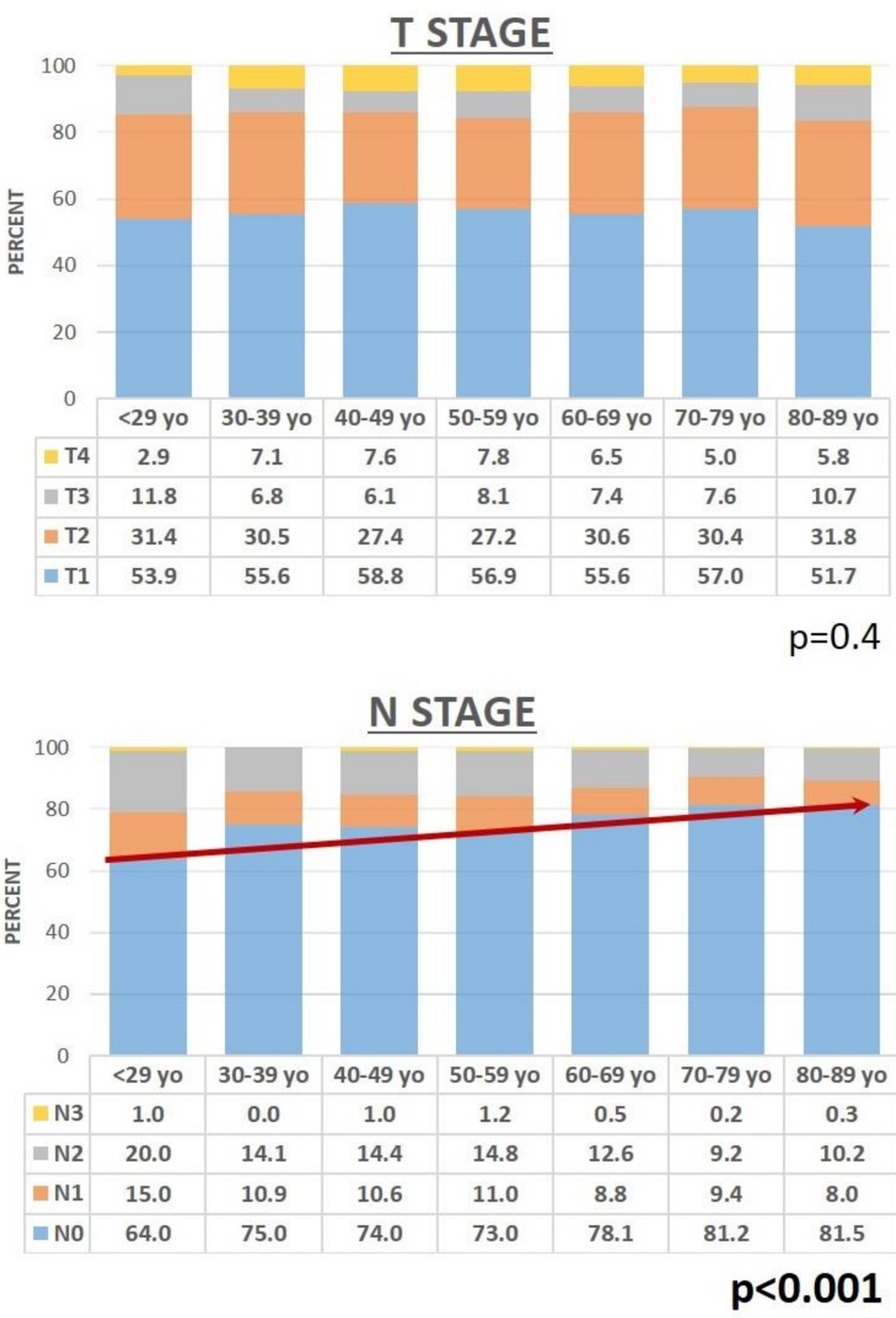


Figure 2. **Kaplan Meier analysis of 5-yr DSS: Oral tongue SCC by age decade (all stages)**

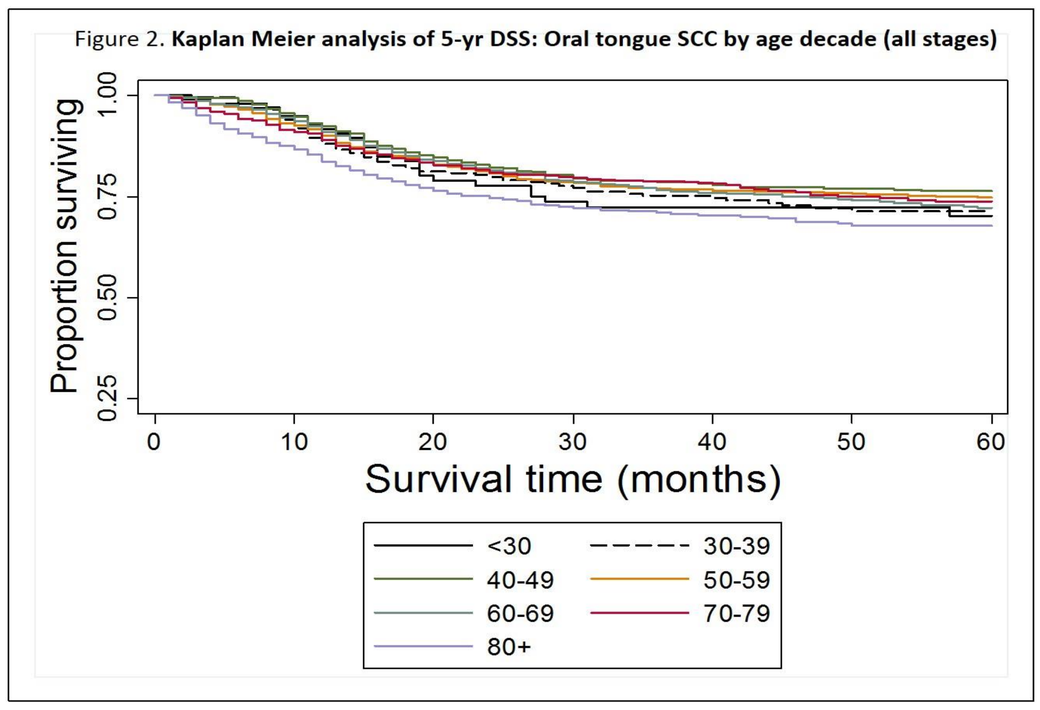


Table 2. **Multivariable analysis of age effect on DSS** (controlled for gender, ethnicity, tumor histology/differentiation, and overall stage)

| | HR | CI (LL) | CI (UL) | P |
|---|---|---|---|---|
| Age at diagnosis (years): <30 | referent | | | |
| 31-39 | 1.16 | 0.63 | 2.13 | 0.64 |
| 40-49 | 0.97 | 0.55 | 1.70 | 0.90 |
| 50-59 | 0.94 | 0.54 | 1.63 | 0.82 |
| 60-69 | 1.05 | 0.61 | 1.83 | 0.85 |
| 70-79 | 1.12 | 0.64 | 1.96 | 0.70 |
| ≥80 | 1.52 | 0.86 | 2.70 | 0.15 |

## Conclusions

Younger patients with oral tongue SCC have a greater risk of advanced stage presentation and high grade pathology.

Stage differences may be attributed to a higher rate of lymphatic metastasis among young patients.

**Contact:** Valerie Fritsch, MD
Medical University of South Carolina
fritschv@musc.edu