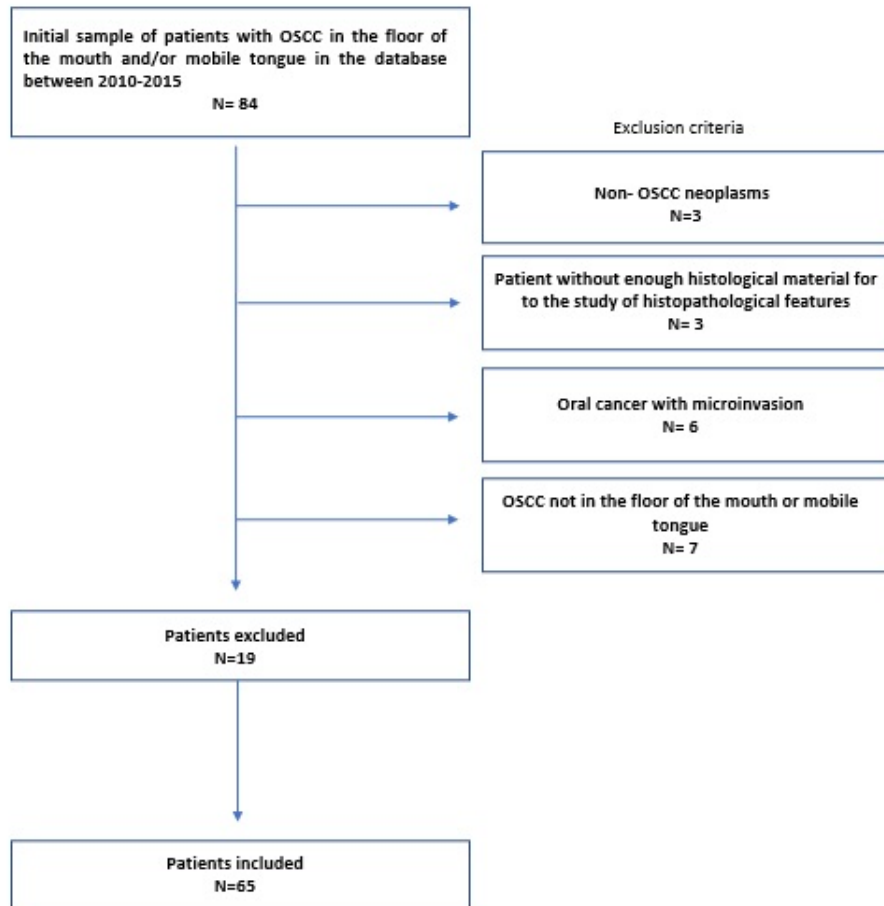SUPPLEMENTARY INFORMATION

Supplementary Figure S1. Flow chart of the selected sample.

Supplementary Table S1. Descriptive statistics of biomarkers according to sex.

| Variable | N | Overall, N = 65 | Sex | | p-value[1] |
| --- | --- | --- | --- | --- | --- |
| | | | Men, N = 40 | Women, N = 25 | |
| PD-1 | 65 | | | | 0.838 |
| Median (IQR) | | 0.01 (0.00, 0.05) | 0.02 (0.00, 0.05) | 0.01 (0.00, 0.03) | |
| PD-1 | 65 | | | | 0.202 |
| PD-1-Negative <0% | | 13 (20%) | 10 (25%) | 3 (12%) | |
| PD-1-Positive >0% | | 52 (80%) | 30 (75%) | 22 (88%) | |
| PD-L1 CPS | 65 | | | | 0.138 |
| Median (IQR) | | 2 (0, 15) | 1 (0, 6) | 3 (1, 22) | |
| PD-L1 CPS | 65 | | | | 0.279 |
| cps[0,1) | | 26 (40%) | 15 (38%) | 11 (44%) | |
| cps[1,20) | | 16 (25%) | 8 (20%) | 8 (32%) | |
| cps[20,100] | | 23 (35%) | 17 (42%) | 6 (24%) | |
| PD-L1 CPS cutoff >1 | 65 | | | | 0.194 |
| PD-L1 Negative CPS<=1 | | 30 (46%) | 21 (52%) | 9 (36%) | |
| PD-L1 Positive CPS>1 | | 35 (54%) | 19 (48%) | 16 (64%) | |
| PD-L1 intensity | 65 | | | | 0.250 |
| Nil | | 25 (38%) | 19 (48%) | 6 (24%) | |
| Low | | 18 (28%) | 10 (25%) | 8 (32%) | |
| Moderate | | 18 (28%) | 9 (22%) | 9 (36%) | |
| Intense | | 4 (6.2%) | 2 (5.0%) | 2 (8.0%) | |
| PD-L1 TPS | 65 | | | | 0.037 |
| Median (IQR) | | 0 (0, 19) | 0 (0, 4) | 1 (0, 40) | |
| PD-L1 TPS cutoffs 5%/10% | 65 | | | | 0.131 |
| PD-L1 <5% | | 43 (66%) | 30 (75%) | 13 (52%) | |
| PD-L1 [5-10%) | | 4 (6.2%) | 2 (5.0%) | 2 (8.0%) | |
| PD-L1[10-100%] | | 18 (28%) | 8 (20%) | 10 (40%) | |
| PD-L1 TPS cutoff 5% | 65 | | | | 0.057 |
| PD-L1 TPS<5% | | 43 (66%) | 30 (75%) | 13 (52%) | |
| PD-L1 TPS>=5% | | 22 (34%) | 10 (25%) | 12 (48%) | |
| PD-L1 TPS cutoff 10% | 65 | | | | 0.153 |
| PD-L1 TPS <=10% | | 48 (74%) | 32 (80%) | 16 (64%) | |
| PD-L1 TPS >10% | | 17 (26%) | 8 (20%) | 9 (36%) | |
| FOXP3 (%) | 65 | | | | 0.073 |
| Median (IQR) | | 15 (10, 20) | 10 (7, 16) | 15 (10, 20) | |
| FOXP3 cutoff 10% | 65 | | | | 0.033 |
| [0-10]% | | 29 (45%) | 22 (55%) | 7 (28%) | |
| (10-100]% | | 36 (55%) | 18 (45%) | 18 (72%) | |
| CD4 (%) | 65 | | | | 0.223 |
| Median (IQR) | | 25 (15, 35) | 20 (15, 31) | 30 (20, 35) | |
| CD4 | 65 | | | | 0.126 |
| [0.05,0.25) | | 31 (48%) | 23 (57%) | 8 (32%) | |
| [0.25,0.35) | | 13 (20%) | 7 (18%) | 6 (24%) | |
| [0.35,0.50] | | 21 (32%) | 10 (25%) | 11 (44%) | |
| P16 | 65 | | | | >0.999 |
| Negative | | 63 (97%) | 39 (98%) | 24 (96%) | |
| Positive | | 2 (3.1%) | 1 (2.5%) | 1 (4.0%) | |
| CSF1R (%) | 65 | | | | 0.619 |
| Median (IQR) | | 7 (3, 10) | 7 (3, 10) | 7 (3, 10) | |
| CSF1R | 65 | | | | 0.217 |
| [0-8%) | | 38 (58%) | 21 (52%) | 17 (68%) | |
| [8-100] | | 27 (42%) | 19 (48%) | 8 (32%) | |
| CD8 (%) | 65 | | | | 0.644 |

Supplementary Table S1. Descriptive statistics of biomarkers according to sex.

| Variable | N | Overall, N = 65 | Sex | | p-value[1] |
| --- | --- | --- | --- | --- | --- |
| | | | Men, N = 40 | Women, N = 25 | |
| Median (IQR) | | 30 (20, 40) | 32 (20, 41) | 30 (25, 35) | |
| CD8 | 65 | | | | 0.099 |
| CD8 [0-10%) Mild | | 5 (7.7%) | 4 (10%) | 1 (4.0%) | |
| CD8 [10-50%] Moderate | | 51 (78%) | 28 (70%) | 23 (92%) | |
| CD8 >=50% Severe | | 9 (14%) | 8 (20%) | 1 (4.0%) | |

[1]Wilcoxon rank sum test; Pearson's Chi-squared test; Fisher's exact test

Abbreviations: IQR: interquartile range.

Supplementary Table S2. Bivariate correlation between biomarkers Spearman's rank-order correlation

| Parameter 1 | Parameter 2 | rho (CI95%) | p-value |
|---|---|---|---|
| PD-1 | PD-L1 | 0.251 (0.001-0.472) | 0.737 |
| PD-1 | FOXP3 | 0.065 (−0.189-0.311) | 1.000 |
| PD-1 | CSF1R | 0.079 (−0.175-0.324) | 1.000 |
| PD-1 | CD4 | 0.092 (−0.163-0.335) | 1.000 |
| PD-1 | CD8 | −0.080 (−0.325-0.174) | 1.000 |
| PD-L1 | FOXP3 | 0.038 (−0.215-0.286) | 1.000 |
| PD-L1 | CSF1R | 0.283 (0.034-0.498) | 0.452 |
| PD-L1 | CD4 | −0.160 (−0.395-0.094) | 1.000 |
| PD-L1 | CD8 | 0.018 (−0.234-0.268) | 1.000 |
| FOXP3 | CSF1R | 0.196 (−0.058-0.426) | 1.000 |
| FOXP3 | CD4 | 0.341 (0.099-0.545) | 0.114 |
| FOXP3 | CD8 | 0.049 (−0.204-0.296) | 1.000 |
| CSF1R | CD4 | 0.014 (−0.238-0.264) | 1.000 |
| CSF1R | CD8 | 0.016 (−0.236-0.266) | 1.000 |
| CD4 | CD8 | 0.243 (−0.008-0.465) | 0.818 |

Abbreviations: CI: Confidence Interval.

Supplementary Table S3.  Descriptive statistics of clinical and histopathological variables according to PD-1 expression and PD-L1 expression in TPS and CPS.

| Variable | N | Overall, N = 65 | PD-1 Expression | | | PD-L1 Expression TPS | | | PD-L1 Expression CPS | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Negative, <0% = 13 | Positive,> >0% N = 52 | p-value[1] | TPS <5% | TPS≥5% | p-value[1] | CPS <= 1 | CPS > 1 | p-value[1] |
| Sex | 65 | | | | 0.202 | | | 0.057 | | | 0.194 |
| Men | | 40 (62%) | 10 (77%) | 30 (58%) | | 30 (70%) | 10 (45%) | | 21 (70%) | 19 (54%) | |
| Women | | 25 (38%) | 3 (23%) | 22 (42%) | | 13 (30%) | 12 (55%) | | 9 (30%) | 16 (46%) | |
| Age at diagnosis | 65 | | | | 0.254 | | | 0.598 | | | 0.171 |
| Mean (SD) | | 67 (57, 73) | 65 (56, 68) | 68 (59, 75) | | 66 (56, 73) | 68 (59, 76) | 0.598 | 66 (55, 71) | 69 (60, 74) | |
| Tobacco use | 63 | | | | 0.539 | | | 0.405 | | | 0.249 |
| Never smoker | | 30 (48%) | 4 (33%) | 26 (51%) | | 18 (42%) | 12 (60%) | | 12 (40%) | 18 (55%) | |
| Former smoker | | 16 (25%) | 4 (33%) | 12 (24%) | | 12 (28%) | 4 (20%) | | 7 (23%) | 9 (27%) | |
| Current smoker | | 17 (27%) | 4 (33%) | 13 (25%) | | 13 (30%) | 4 (20%) | | 11 (37%) | 6 (18%) | |
| Alcohol use | 60 | | | | 0.685 | | | 0.910 | | | >0.999 |
| Nondrinker | | 41 (68%) | 7 (58%) | 34 (71%) | | 27 (66%) | 14 (74%) | | 20 (69%) | 21 (68%) | |
| Former drinker | | 7 (12%) | 2 (17%) | 5 (10%) | | 5 (12%) | 2 (11%) | | 3 (10%) | 4 (13%) | |
| Current drinker | | 12 (20%) | 3 (25%) | 9 (19%) | | 9 (22%) | 3 (16%) | | 6 (21%) | 6 (19%) | |
| Mouth Primary Location | 65 | 23 (35%) | 5 (38%) | 18 (35%) | >0.999 | 18 (42%) | 5 (23%) | 0.127 | 17 (57%) | 6 (17%) | <0.001 |
| Tongue Primary Location | 65 | 48 (74%) | 11 (85%) | 37 (71%) | 0.486 | 30 (70%) | 18 (82%) | 0.296 | 18 (60%) | 30 (86%) | 0.019 |
| Tumor Size status | 63 | | | | 0.157 | | | 0.518 | | | 0.633 |
| T1 | | 13 (21%) | 2 (17%) | 11 (22%) | | 10 (24%) | 3 (14%) | | 5 (17%) | 8 (24%) | |
| T2 | | 25 (40%) | 2 (17%) | 23 (45%) | | 14 (33%) | 11 (52%) | | 10 (34%) | 15 (44%) | |
| T3 | | 13 (21%) | 4 (33%) | 9 (18%) | | 10 (24%) | 3 (14%) | | 7 (24%) | 6 (18%) | |
| T4 | | 12 (19%) | 4 (33%) | 8 (16%) | | 8 (19%) | 4 (19%) | | 7 (24%) | 5 (15%) | |
| Nodal status | 60 | | | | 0.200 | | | 0.143 | | | 0.756 |
| N0 | | 36 (60%) | 5 (45%) | 31 (63%) | | 27 (68%) | 9 (45%) | | 16 (59%) | 20 (61%) | |
| N1 | | 8 (13%) | 3 (27%) | 5 (10%) | | 5 (12%) | 3 (15%) | | 4 (15%) | 4 (12%) | |
| N2 | | 14 (23%) | 2 (18%) | 12 (24%) | | 8 (20%) | 6 (30%) | | 7 (26%) | 7 (21%) | |
| N3 | | 2 (3.3%) | 1 (9.1%) | 1 (2.0%) | | 0 (0%) | 2 (10%) | | 0 (0%) | 2 (6.1%) | |
| Metastasis status | 60 | | | | 0.330 | | | 0.404 | | | 0.222 |
| M0 | | 53 (88%) | 8 (80%) | 45 (90%) | | 33 (85%) | 20 (95%) | | 21 (81%) | 32 (94%) | |
| M1 | | 7 (12%) | 2 (20%) | 5 (10%) | | 6 (15%) | 1 (4.8%) | | 5 (19%) | 2 (5.9%) | |
| Stage | 63 | | | | 0.574 | | | 0.612 | | | 0.680 |
| Stage I | | 8 (13%) | 1 (8.3%) | 7 (14%) | | 7 (17%) | 1 (4.8%) | | 4 (14%) | 4 (12%) | |
| Stage II | | 13 (21%) | 3 (25%) | 10 (20%) | | 9 (21%) | 4 (19%) | | 5 (17%) | 8 (24%) | |
| Stage III | | 28 (44%) | 7 (58%) | 21 (41%) | | 17 (40%) | 11 (52%) | | 15 (52%) | 13 (38%) | |
| Stage IV | | 14 (22%) | 1 (8.3%) | 13 (25%) | | 9 (21%) | 5 (24%) | | 5 (17%) | 9 (26%) | |
| Histological Grade | 65 | | | | 0.478 | | | 0.239 | | | 0.456 |
| Grade 1: WD | | 22 (34%) | 4 (31%) | 18 (35%) | | 17 (40%) | 5 (23%) | | 11 (37%) | 11 (31%) | |
| Grade 2: MD | | 37 (57%) | 9 (69%) | 28 (54%) | | 21 (49%) | 16 (73%) | | 15 (50%) | 22 (63%) | |
| Grade 3: PD | | 6 (9.2%) | 0 (0%) | 6 (12%) | | 5 (12%) | 1 (4.5%) | | 4 (13%) | 2 (5.7%) | |
| Oral potentially malignant disorders | 65 | 10 (15%) | 0 (0%) | 10 (19%) | 0.191 | 7 (16%) | 3 (14%) | >0.999 | 6 (20%) | 4 (11%) | 0.493 |
| Lymphoplasmacytic invasion | 65 | | | | 0.030 | | | 0.647 | | | 0.731 |
| Nil | | 2 (3.1%) | 0 (0%) | 2 (3.8%) | | 2 (4.7%) | 0 (0%) | | 1 (3.3%) | 1 (2.9%) | |
| Low | | 33 (51%) | 11 (85%) | 22 (42%) | | 20 (47%) | 13 (59%) | | 15 (50%) | 18 (51%) | |
| Moderate | | 25 (38%) | 1 (7.7%) | 24 (46%) | | 18 (42%) | 7 (32%) | | 13 (43%) | 12 (34%) | |
| Intense | | 5 (7.7%) | 1 (7.7%) | 4 (7.7%) | | 3 (7.0%) | 2 (9.1%) | | 1 (3.3%) | 4 (11%) | |
| Vascular invasion | 65 | 5 (7.7%) | 1 (7.7%) | 4 (7.7%) | >0.999 | 3 (7.0%) | 2 (9.1%) | >0.999 | 3 (10%) | 2 (5.7%) | 0.655 |
| Perineural invasion | 65 | 26 (40%) | 7 (54%) | 19 (37%) | 0.255 | 19 (44%) | 7 (32%) | 0.335 | 14 (47%) | 12 (34%) | 0.310 |
| WPOI | 65 | | | | 0.313 | | | | | | 0.016 |
| WPOI 1 | | 4 (6.2%) | 1 (7.7%) | 3 (5.8%) | | 4 (9.3%) | 0 (0%) | 0.102 | 4 (13%) | 0 (0%) | |
| WPOI 2 | | 30 (46%) | 4 (31%) | 26 (50%) | | 17 (40%) | 13 (59%) | | 10 (33%) | 20 (57%) | |
| WPOI 3 | | 20 (31%) | 7 (54%) | 13 (25%) | | 13 (30%) | 7 (32%) | | 8 (27%) | 12 (34%) | |
| WPOI 4 | | 4 (6.2%) | 0 (0%) | 4 (7.7%) | | 2 (4.7%) | 2 (9.1%) | | 2 (6.7%) | 2 (5.7%) | |
| WPOI 5 | | 7 (11%) | 1 (7.7%) | 6 (12%) | | 7 (16%) | 0 (0%) | | 6 (20%) | 1 (2.9%) | |
| Risk Score | 65 | | | | 0.165 | | | 0.229 | | | 0.043 |
| 0-1 | | 24 (37%) | 2 (15%) | 22 (42%) | | 17 (40%) | 7 (32%) | | 12 (40%) | 12 (34%) | |
| 2-3 | | 18 (28%) | 4 (31%) | 14 (27%) | | 9 (21%) | 9 (41%) | | 4 (13%) | 14 (40%) | |
| 4-7 | | 23 (35%) | 7 (54%) | 16 (31%) | | 17 (40%) | 6 (27%) | | 14 (47%) | 9 (26%) | |
| Depth of invasion | 63 | | | | 0.017 | | | 0.170 | | | 0.978 |

| Characteristic | N | Overall | | | p[1] | | | p[1] | | | p[1] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Median (IQR) | | 9 (3, 12) | 12 (7, 16) | 8 (3, 11) | | 7 (3, 11) | 10 (8, 12) | | 7 (3, 12) | 9 (4, 12) | |
| Local recurrence | 65 | 65 | 19 (29%) | 3 (23%) | 0.740 | 10 (23%) | 9 (41%) | 0.139 | 5 (17%) | 14 (40%) | 0.039 |
| Regional recurrence | 65 | 65 | 6 (9.2%) | 3 (23%) | 0.089 | 5 (12%) | 1 (4.5%) | 0.655 | 3 (10%) | 3 (8.6%) | >0.999 |
| Distant recurrence | 65 | 65 | 2 (3.1%) | 1 (7.7%) | 0.362 | 2 (4.7%) | 0 (0%) | 0.545 | 1 (3.3%) | 1 (2.9%) | >0.999 |
| DFS outcome | 65 | | | | 0.039 | | | | | | |
|   Alive and without recurrence | | 26 (40%) | 2 (15%) | 24 (46%) | | 16 (37%) | 10 (45%) | | 11 (37%) | 15 (43%) | |
|   Death | | 5 (7.7%) | 1 (7.7%) | 4 (7.7%) | | 4 (9.3%) | 1 (4.5%) | | 4 (13%) | 1 (2.9%) | |
|   Death OSCC | | 11 (17%) | 4 (31%) | 7 (13%) | | 9 (21%) | 2 (9.1%) | | 7 (23%) | 4 (11%) | |
|   Local recurrence | | 18 (28%) | 3 (23%) | 15 (29%) | | 10 (23%) | 8 (36%) | | 5 (17%) | 13 (37%) | |
|   Regional or Nodal recurrence | | 5 (7.7%) | 3 (23%) | 2 (3.8%) | | 4 (9.3%) | 1 (4.5%) | | 3 (10%) | 2 (5.7%) | |
| DFS event | 65 | 34 (52%) | 10 (77%) | 24 (46%) | 0.047 | 23 (53%) | 11 (50%) | 0.790 | 15 (50%) | 19 (54%) | 0.730 |
| DSS outcome | 65 | | | | 0.009 | | | 0.404 | | | 0.148 |
|   Alive with or without recurrence | | 33 (51%) | 2 (15%) | 31 (60%) | | 19 (44%) | 14 (64%) | | 12 (40%) | 21 (60%) | |
|   Death | | 5 (7.7%) | 1 (7.7%) | 4 (7.7%) | | 4 (9.3%) | 1 (4.5%) | | 4 (13%) | 1 (2.9%) | |
|   Death OSCC | | 27 (42%) | 10 (77%) | 17 (33%) | | 20 (47%) | 7 (32%) | | 14 (47%) | 13 (37%) | |
| DSS event | 65 | 34 (52%) | 10 (77%) | 24 (46%) | 0.004 | 20 (47%) | 7 (32%) | 0.255 | 14 (47%) | 13 (37%) | |
| OS Outcome | 65 | | | | 0.004 | | | 0.138 | | | 0.108 |
|   Alive with or without recurrence | | 33 (51%) | 2 (15%) | 31 (60%) | | 19 (44%) | 14 (64%) | | 12 (40%) | 21 (60%) | |
|   Death by any cause | | 32 (49%) | 11 (85%) | 21 (40%) | | 24 (56%) | 8 (36%) | | 18 (60%) | 14 (40%) | |
| **Overall Survival event** | 65 | 32 (49%) | 11 (85%) | 21 (40%) | 0.004 | 24 (56%) | 8 (36%) | 0.138 | 18 (60%) | 14 (40%) | 0.108 |

[1] Wilcoxon rank sum test; Pearson's Chi-squared test; Fisher's exact test

Abbreviations: DFS: Disease-free survival, DSS: Disease-specific survival, MD: Moderately differentiated, OSCC: Oral squamous cell carcinoma, OS: Overall survival PD: Poorly differentiated, SD: standard deviation, WD: Well differentiated, WPOI: worst pattern of invasion.

Supplementary Table S4. Univariate analysis of clinical and histopathological variables for the different survival rates (OS, DSS, DFS)

Cox proportional Hazard Model

| | OS: HR(CI95%) | p-value | DSS: HR(CI95%) | p-value | DFS: HR(CI95%) | p-value |
|---|---|---|---|---|---|---|
| **Age at diagnosis** | | | | | | |
| | Ref.Cat. | - | Ref.Cat. | - | Ref.Cat. | - |
| NA | 1.02 (0.99-1.05) | 0.107 | 1.01 (0.98-1.04) | 0.373 | 1.02 (0.99-1.04) | 0.177 |
| **Gender** | | | | | | |
| Men | Ref.Cat. | - | Ref.Cat. | - | Ref.Cat. | - |
| Women | 0.35 (0.15-0.82) | 0.015 | 0.36 (0.14-0.89) | 0.028 | 0.80 (0.40-1.63) | 0.549 |
| **Tobacco use** | | | | | | |
| Never smoker | Ref.Cat. | - | Ref.Cat. | - | Ref.Cat. | - |
| Former smoker | 1.50 (0.59-3.84) | 0.395 | 1.96 (0.73-5.31) | 0.184 | 1.40 (0.62-3.19) | 0.418 |
| Current smoker | 2.11 (0.90-4.90) | 0.084 | 2.47 (0.97-6.27) | 0.056 | 1.14 (0.50-2.59) | 0.757 |
| **Alcohol use** | | | | | | |
| Nondrinker | Ref.Cat. | - | Ref.Cat. | - | Ref.Cat. | - |
| Former drinker | 1.73 (0.64-4.68) | 0.280 | 2.07 (0.75-5.73) | 0.162 | 1.78 (0.72-4.44) | 0.211 |
| Current drinker | 1.28 (0.51-3.25) | 0.596 | 1.25 (0.45-3.45) | 0.667 | 1.13 (0.46-2.83) | 0.787 |
| **Tumor location** | | | | | | |
| Tongue | Ref.Cat. | - | Ref.Cat. | - | Ref.Cat. | - |
| Base of the Mouth | 0.87 (0.36-2.05) | 0.741 | 0.92 (0.36-2.35) | 0.857 | 0.67 (0.29-1.57) | 0.358 |
| Tongue and Base of the Mouth | 1.16 (0.34-3.93) | 0.810 | 1.39 (0.40-4.78) | 0.603 | 1.61 (0.55-4.68) | 0.384 |
| **Tumor status** | | | | | | |
| T1 | Ref.Cat. | - | Ref.Cat. | - | Ref.Cat. | - |
| T2 | 1.46 (0.47-4.54) | 0.516 | 1.43 (0.38-5.31) | 0.596 | 1.06 (0.40-2.83) | 0.912 |
| T3 | 2.16 (0.63-7.41) | 0.222 | 2.43 (0.60-9.76) | 0.211 | 1.04 (0.34-3.23) | 0.944 |
| T4 | 2.29 (0.69-7.65) | 0.177 | 3.00 (0.79-11.38) | 0.107 | 2.21 (0.80-6.10) | 0.124 |
| **Nodal Status** | | | | | | |
| N0 | Ref.Cat. | - | Ref.Cat. | - | Ref.Cat. | - |
| N1 | 1.21 (0.40-3.67) | 0.741 | 1.07 (0.30-3.84) | 0.912 | 1.57 (0.57-4.31) | 0.384 |
| N2/N3 | 1.04 (0.45-2.40) | 0.920 | 1.12 (0.46-2.76) | 0.795 | 0.88 (0.40-1.98) | 0.764 |
| **Metastasis status** | | | | | | |
| M0 | Ref.Cat. | - | Ref.Cat. | - | Ref.Cat. | - |
| M1 | 5.84 (2.18-15.64) | 0.000 | 6.00 (2.02-17.81) | 0.001 | 3.11 (1.15-8.44) | 0.026 |
| **Histological Grade** | | | | | | |
| Grade 1: WD | Ref.Cat. | - | Ref.Cat. | - | Ref.Cat. | - |
| Grade 2: MD | 1.26 (0.54-2.95) | 0.596 | 1.77 (0.64-4.92) | 0.276 | 1.63 (0.72-3.71) | 0.242 |
| Grade 3: PD | 5.07 (1.73-14.84) | 0.003 | 8.09 (2.43-26.97) | 0.001 | 5.15 (1.75-15.15) | 0.003 |
| **Stage** | | | | | | |
| Stage I | Ref.Cat. | - | Ref.Cat. | - | Ref.Cat. | - |
| Stage II | 1.43 (0.28-7.39) | 0.674 | 2.75 (0.32-23.63) | 0.358 | 1.41 (0.36-5.48) | 0.617 |
| Stage III | 2.24 (0.52-9.74) | 0.280 | 3.88 (0.51-29.46) | 0.190 | 1.56 (0.46-5.36) | 0.478 |
| Stage IV | 1.71 (0.35-8.29) | 0.503 | 2.39 (0.28-20.48) | 0.430 | 1.32 (0.34-5.12) | 0.689 |
| **Oral potentially malignant disorders** | | | | | | |
| No | Ref.Cat. | - | Ref.Cat. | - | Ref.Cat. | - |
| Yes | 0.81 (0.28-2.32) | 0.697 | 0.46 (0.11-1.94) | 0.289 | 0.74 (0.26-2.10) | 0.569 |
| **Perineural invasion** | | | | | | |
| No | Ref.Cat. | - | Ref.Cat. | - | Ref.Cat. | - |
| Yes | 1.21 (0.58-2.51) | 0.610 | 1.25 (0.56-2.79) | 0.575 | 1.04 (0.52-2.08) | 0.912 |
| **Vascular invasion** | | | | | | |
| No | Ref.Cat. | - | Ref.Cat. | - | Ref.Cat. | - |
| Yes | 0.68 (0.16-2.95) | 0.610 | 0.81 (0.18-3.59) | 0.787 | 0.59 (0.14-2.53) | 0.478 |
| **Lymphoplasmacytic invasion** | | | | | | |
| Nil/Low | Ref.Cat. | - | Ref.Cat. | - | Ref.Cat. | - |
| Moderate | 0.86 (0.40-1.89) | 0.711 | 0.67 (0.28-1.64) | 0.384 | 0.90 (0.43-1.88) | 0.779 |
| Intense | 1.04 (0.24-4.61) | 0.952 | 1.16 (0.26-5.19) | 0.841 | 0.73 (0.17-3.15) | 0.674 |
| **Margins affected** | | | | | | |
| No | Ref.Cat. | - | Ref.Cat. | - | Ref.Cat. | - |
| Yes | 0.50 (0.07-3.71) | 0.503 | 0.61 (0.08-4.53) | 0.631 | 0.44 (0.06-3.22) | 0.418 |
| **Risk Score** | | | | | | |
| 0-1 | Ref.Cat. | - | Ref.Cat. | - | Ref.Cat. | - |
| 2-3 | 0.92 (0.36-2.37) | 0.865 | 1.02 (0.37-2.86) | 0.968 | 1.02 (0.43-2.41) | 0.968 |
| 4-7 | 1.26 (0.54-2.94) | 0.582 | 1.35 (0.53-3.41) | 0.529 | 1.17 (0.52-2.63) | 0.704 |
| **WPOI 1+2+3 VS 4+5** | | | | | | |
| WPOI 1+2+3 | Ref.Cat. | - | Ref.Cat. | - | Ref.Cat. | - |
| WPOI 4+5 | 2.34 (1.00-5.47) | 0.050 | 1.92 (0.72-5.12) | 0.194 | 1.76 (0.72-4.28) | 0.211 |
| **Depth of Invasion** | | | | | | |
| Less invasive | Ref.Cat. | - | Ref.Cat. | - | Ref.Cat. | - |
| Moderate invasive | 0.93 (0.39-2.23) | 0.873 | 0.89 (0.34-2.36) | 0.818 | 1.07 (0.48-2.42) | 0.865 |

| | | | | | |
|---|---|---|---|---|---|
| Deeply invasive | 0.64 (0.26-1.57) | 0.332 | 0.69 (0.26-1.81) | 0.453 | 0.51 (0.21-1.20) | 0.124 |