|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Characteristics** | **Pre-PSM** | | | | **Post-PSM** | | | |
| **SCCB n(%) (N=434)** | **TCC n(%) (N=16093)** | **Overalln(%) (N=16527)** | **P value** | **SCCB n(%) (N=433)** | **TCC n(%) (N=1719)** | **Overall n(%) (N=2152)** | **P value** |
| **Age,years** |  |  |  | 0.6735 |  |  |  | 0.9987 |
| <50 | 12 (2.8%) | 564 (3.5%) | 576 (3.5%) |  | 12 (2.8%) | 50 (2.9%) | 62 (2.9%) |  |
| 50-59 | 49 (11.3%) | 2136 (13.3%) | 2185 (13.2%) |  | 49 (11.3%) | 195 (11.3%) | 244 (11.3%) |  |
| 60-69 | 123 (28.3%) | 4355 (27.1%) | 4478 (27.1%) |  | 123 (28.4%) | 497 (28.9%) | 620 (28.8%) |  |
| 70-79 | 131 (30.2%) | 4762 (29.6%) | 4893 (29.6%) |  | 130 (30.0%) | 505 (29.4%) | 635 (29.5%) |  |
| ≥80 | 119 (27.4%) | 4276 (26.6%) | 4395 (26.6%) |  | 119 (27.5%) | 472 (27.5%) | 591 (27.5%) |  |
| **Sex** |  |  |  | 0.4942 |  |  |  | 0.9739 |
| Female | 107 (24.7%) | 4222 (26.2%) | 4329 (26.2%) |  | 107 (24.7%) | 421 (24.5%) | 528 (24.5%) |  |
| Male | 327 (75.3%) | 11871 (73.8%) | 12198 (73.8%) |  | 326 (75.3%) | 1298 (75.5%) | 1624 (75.5%) |  |
| **Race** |  |  |  | 0.7418 |  |  |  | 0.3186 |
| Black | 26 (6.0%) | 1084 (6.7%) | 1110 (6.7%) |  | 26 (6.0%) | 78 (4.5%) | 104 (4.8%) |  |
| White | 386 (88.9%) | 14116 (87.7%) | 14502 (87.7%) |  | 385 (88.9%) | 1568 (91.2%) | 1953 (90.8%) |  |
| Other | 22 (5.1%) | 893 (5.5%) | 915 (5.5%) |  | 22 (5.1%) | 73 (4.2%) | 95 (4.4%) |  |
| **Marital status** |  |  |  | 0.4606 |  |  |  | 0.8474 |
| Yes | 259 (59.7%) | 9904 (61.5%) | 10163 (61.5%) |  | 259 (59.8%) | 1017 (59.2%) | 1276 (59.3%) |  |
| No | 175 (40.3%) | 6189 (38.5%) | 6364 (38.5%) |  | 174 (40.2%) | 702 (40.8%) | 876 (40.7%) |  |
| **Stage** |  |  |  | < 0.001 |  |  |  | 0.3109 |
| I | 44 (10.1%) | 5863 (36.4%) | 5907 (35.7%) |  | 44 (10.2%) | 125 (7.2%) | 169 (7.9%) |  |
| II | 173 (39.9%) | 4659 (29.0%) | 4832 (29.2%) |  | 173 (40.0%) | 749 (43.6%) | 922 (42.8%) |  |
| III | 65 (15.0%) | 2392 (14.9%) | 2457 (14.9%) |  | 65 (15.0%) | 285 (16.6%) | 350 (16.3%) |  |
| IV | 152 (35.0%) | 3179 (19.8%) | 3331 (20.2%) |  | 151 (34.9%) | 560 (32.6%) | 711 (33.0%) |  |
| **T** |  |  |  | < 0.001 |  |  |  | 0.4532 |
| T1 | 65 (15.0%) | 6039 (37.5%) | 6104 (36.9) |  | 64 (14.8%) | 191 (11.1%) | 255 (11.8%) |  |
| T2 | 232 (53.5%) | 5611 (34.9%) | 5843 (35.4%) |  | 232 (53.6%) | 974 (56.7%) | 1206 (56.0%) |  |
| T3 | 87 (20.0%) | 2927 (18.2%) | 3014 (18.2%) |  | 87 (20.1%) | 355 (20.7%) | 442 (20.5%) |  |
| T4 | 50 (11.5%) | 1516 (9.4%) | 1566 (9.5%) |  | 50 (11.5%) | 199 (11.6%) | 249 (11.6%) |  |
| **N** |  |  |  | < 0.001 |  |  |  | 0.7584 |
| N0 | 341 (78.6%) | 13656 (84.9%) | 13997 (84.7%) |  | 340 (78.5%) | 1376 (80.0%) | 1716 (79.7%) |  |
| N1 | 30 (6.9%) | 1184 (7.4%) | 1214 (7.3%) |  | 30 (6.9%) | 115 (6.7%) | 145 (6.7%) |  |
| N2 | 63 (14.5%) | 1198 (7.4%) | 1261 (7.6%) |  | 63 (14.5%) | 228 (13.3%) | 291 (13.5%) |  |
| N3 | 0 (0%) | 55 (0.3%) | 55 (0.3%) |  | 0 (0%) | 0 (0%) | 0 (0%) |  |
| **M** |  |  |  | < 0.001 |  |  |  | 0.5246 |
| M0 | 354 (81.6%) | 14962 (93.0%) | 15316 (92.7%) |  | 354 (81.8%) | 1430 (83.2%) | 1784 (82.9%) |  |
| M1 | 80 (18.4%) | 1131 (7.0%) | 1211 (7.3%) |  | 79 (18.2%) | 289 (16.8%) | 368 (17.1%) |  |
| **Surgery** |  |  |  | 0.4337 |  |  |  | 0.4787 |
| No | 11 (2.5%) | 382 (2.4%) | 393 (2.4%) |  | 11 (2.5%) | 42 (2.4%) | 53 (2.5%) |  |
| Cystectomy | 135 (31.1%) | 5623 (34.9%) | 5758 (34.8%) |  | 135 (31.2%) | 605 (35.2%) | 740 (34.4%) |  |
| TURB | 229 (52.8%) | 8017 (49.8%) | 8246 (49.9%) |  | 229 (52.9%) | 857 (49.9%) | 1086 (50.5%) |  |
| Other | 59 (13.6%) | 2071 (12.9%) | 2130 (12.9%) |  | 58 (13.4%) | 215 (12.5%) | 273 (12.7%) |  |
| **Radiation** |  |  |  | < 0.001 |  |  |  | 0.3118 |
| Yes | 136 (31.3%) | 1802 (11.2%) | 1938 (11.7%) |  | 135 (31.2%) | 491 (28.6%) | 626 (29.1%) |  |
| None/Unknown | 298 (68.7%) | 14291 (88.8%) | 14589 (88.3%) |  | 298 (68.8%) | 1228 (71.4%) | 1526 (70.9%) |  |
| **Chemotherapy** |  |  |  | < 0.001 |  |  |  | 0.9921 |
| Yes | 304 (70.0%) | 5903 (36.7%) | 6207 (37.6%) |  | 303 (70.0%) | 1200 (69.8%) | 1503 (69.8%) |  |
| No/Unknown | 130 (30.0%) | 10190 (63.3%) | 10320 (62.4%) |  | 130 (30.0%) | 519 (30.2%) | 649 (30.2%) |  |
| **Tumor size,mm** |  |  |  | < 0.001 |  |  |  | 0.7183 |
| ≤30 | 143 (32.9%) | 6929 (43.1%) | 7072 (42.8%) |  | 143 (33.0%) | 562 (32.7%) | 705 (32.8%) |  |
| 31-51 | 172 (39.6%) | 5675 (35.3%) | 5847 (35.4%) |  | 172 (39.7%) | 656 (38.2%) | 828 (38.5%) |  |
| ≥52 | 119 (27.4%) | 3489 (21.7%) | 3608 (21.8%) |  | 118 (27.3%) | 501 (29.1%) | 619 (28.8%) |  |

**Table 2.** Univariate and multivariate analyses of OS.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Characteristics** | **Univariate analysis** | | **Multivariate analysis** | |
| **HR (95%CI)** | **P value** | **HR (95%CI)** | **P value** |
| **Age,years** |  |  |  |  |
| <50 | Reference |  | Reference |  |
| 50-59 | 2.060 (0.998-4.250) | 0.100 | 1.484 (0.694-3.175) | 0.393 |
| 60-69 | 1.784 (0.891-3.572) | 0.170 | 1.211 (0.588-2.492) | 0.663 |
| 70-79 | 2.434 (1.220-4.856) | 0.034 | 1.763 (0.858-3.622) | 0.195 |
| ≥80 | 3.773 (1.890-7.532) | 0.002 | 2.387 (1.162-4.904) | 0.047 |
| **Sex** |  |  |  |  |
| Female | Reference |  |  |  |
| Male | 1.066 (0.866-1.312) | 0.611 |  |  |
| **Race** |  |  |  |  |
| Black | Reference |  | Reference |  |
| White | 0.707(0.495-1.009) | 0.109 | 1.097 (0.747-1.609) | 0.694 |
| Other | 0.400 (0.220-0.699) | 0.007 | 0.483 (0.265-0.880) | 0.046 |
| **Marital status** |  |  |  |  |
| No | Reference |  | Reference |  |
| Yes | 0.667 (0.557-0.798) | <0.001 | 0.782 (0.645-0.947) | 0.035 |
| **Stage** |  |  |  |  |
| I | Reference |  | Reference |  |
| II | 1.601 (1.050-2.442) | 0.055 | 1.462 (0.811-2.636) | 0.289 |
| III | 1.821 (1.129-2.937) | 0.024 | 1.287 (0.680-2.436) | 0.515 |
| IV | 2.985 (1.957-4.553) | <0.001 | 1.250 (0.628-2.486) | 0.594 |
| **T** |  |  |  |  |
| T1 | Reference |  | Reference |  |
| T2 | 1.294 (0.983-1.702) | 0.122 | 1.199 (0.742-1.937) | 0.533 |
| T3 | 1.512 (1.107-2.067) | 0.029 | 1.909 (1.117-3.262) | 0.047 |
| T4 | 2.173 (1.530-3.086) | <0.001 | 2.093 (1.244-3.522) | 0.020 |
| **N** |  |  |  |  |
| N0 | Reference |  | Reference |  |
| N1 | 1.414 (1.001-1.996) | 0.099 | 1.793 (1.010-2.923) | 0.049 |
| N2 | 1.700 (1.342-2.153) | <0.001 | 1.647 (1.137-2.387) | 0.027 |
| **M** |  |  |  |  |
| M0 | Reference |  | Reference |  |
| M1 | 2.513 (2.019-3.127) | <0.001 | 3.198 (2.164-4.725) | <0.001 |
| **Surgery** |  |  |  |  |
| Cystectomy | Reference |  | Reference |  |
| No | 1.794 (1.039-3.097) | 0.078 | 2.204 (1.235-3.934) | 0.025 |
| TURB | 1.417 (1.156-1.737) | 0.005 | 1.583 (1.234-2.032) | 0.002 |
| Other | 1.157 (0.859-1.558) | 0.421 | 1.166 (0.840-1.618) | 0.442 |
| **Radiation** |  |  |  |  |
| None/Unknown | Reference |  | Reference |  |
| Yes | 0.899 (0.743-1.088) | 0.359 |  |  |
| **Chemotherapy** |  |  |  |  |
| No/Unknown | Reference |  | Reference |  |
| Yes | 0.563 (0.466-0.681) | <0.001 | 0.480 (0.388-0.595) | <0.001 |
| **Tumor size,mm** |  |  |  |  |
| ≤30 | Reference |  | Reference |  |
| 31-51 | 1.054 (0.853-1.304) | 0.682 | 0.843 (0.675-1.054) | 0.208 |
| ≥52 | 1.321 (1.054-1.657) | 0.043 | 0.889 (0.699-1.130) | 0.420 |

**Table 3.** Univariate and multivariate analyses of CSS.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Characteristics** | **Univariate analysis** | | **Multivariate analysis** | |
|  | **HR (95%CI)** | **P value** | **HR (95%CI)** | **P value** |
| **Age,years** |  |  |  |  |
| <50 | Reference |  | Reference |  |
| 50-59 | 1.656 (0.795-3.449) | 0.259 | 0.959 (0.445-2.065) | 0.928 |
| 60-69 | 1.442 (0.717-2.898) | 0.388 | 0.758 (0.364-1.576) | 0.533 |
| 70-79 | 1.753 (0.874-3.517) | 0.185 | 0.990 (0.480-2.045) | 0.983 |
| ≥80 | 2.437 (1.212-4.899) | 0.036 | 1.183 (0.567-2.470) | 0.707 |
| **Sex** |  |  |  |  |
| Female | Reference |  |  |  |
| Male | 0.995 (0.790-1.253) | 0.971 |  |  |
| **Race** |  |  |  |  |
| Black | Reference |  | Reference |  |
| White | 0.661 (0.451-0.970) | 0.076 | 0.995 (0.655-1.512) | 0.985 |
| Other | 0.286 (0.144-0.570) | 0.003 | 0.334 (0.161-0.696) | 0.014 |
| **Marital status** |  |  |  |  |
| No | Reference |  | Reference |  |
| Yes | 0.734 (0.599-0.900) | 0.012 | 0.890 (0.715-1.109) | 0.384 |
| **Stage** |  |  |  |  |
| I | Reference |  | Reference |  |
| II | 1.647 (1.065-2.547) | 0.060 | 1.713 (0.886-3.311) | 0.179 |
| III | 2.178 (1.350-3.516) | 0.007 | 2.261 (1.104-4.632) | 0.061 |
| IV | 3.716 (2.421-5.703) | <0.001 | 1.875 (0.884-3.979) | 0.169 |
| **T** |  |  |  |  |
| T1 | Reference |  | Reference |  |
| T2 | 1.331 (0.968-1.831) | 0.140 | 1.175 (0.715-1.933) | 0.593 |
| T3 | 1.590 (1.110-2.278) | 0.034 | 1.611 (0.910-2.853) | 0.170 |
| T4 | 2.519 (1.703-3.725) | <0.001 | 2.001 (1.161-3.451) | 0.036 |
| **N** |  |  |  |  |
| N0 | Reference |  | Reference |  |
| N1 | 1.708 (1.188-2.456) | 0.015 | 2.121 (1.279-3.517) | 0.015 |
| N2 | 1.812 (1.398-2.347) | <0.001 | 1.612 (1.095-2.37) | 0.042 |
| **M** |  |  |  |  |
| M0 | Reference |  | Reference |  |
| M1 | 2.901 (2.298-3.662) | <0.001 | 3.272 (2.196-4.875) | <0.001 |
| **Surgery** |  |  |  |  |
| Cystectomy | Reference |  | Reference |  |
| No | 2.183 (1.221-3.902) | 0.027 | 3.044 (1.631-5.681) | 0.003 |
| TURB | 1.501 (1.190-1.894) | 0.004 | 1.822 (1.367-2.428) | <0.001 |
| Other | 1.187 (0.845-1.668) | 0.408 | 1.380 (0.948-2.008) | 0.158 |
| **Radiation** |  |  |  |  |
| None/Unknown | Reference |  |  |  |
| Yes | 0.813 (0.653-1.013) | 0.121 |  |  |
| **Chemotherapy** |  |  |  |  |
| No/Unknown | Reference |  | Reference |  |
| Yes | 0.542 (0.438-0.671) | <0.001 | 0.389 (0.304-0.499) | <0.001 |
| **Tumor size,mm** |  |  |  |  |
| ≤30 | Reference |  | Reference |  |
| 31-51 | 1.201 (0.941-1.532) | 0.217 | 0.945 (0.732-1.219) | 0.715 |
| ≥52 | 1.476 (1.138-1.913) | 0.014 | 0.948 (0.720-1.248) | 0.748 |