*Supplemental Table 1. Univariate Cox Proportional Hazards Analysis of Clinical and Molecular Variables as Predictors of 10-year DRFS*

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| --- | --- | --- | --- | --- | --- | --- |
| **Variable** | **N** | **Events** | **Reference** | **Level** | **HR (95% CI)** | **p-value** |
| EPclin score (continuous) | 385 | 35 | — | — | 3.58 (2.26, 5.66) | 9.8 x 10-8 |
| EPclin score (categorical) | 385 | 35 | Low  (<3.32867) | High  (≥3.32867) | 4.61 (1.40, 15.17) | 4.2 x 10-3 |
| EP molecular score (continuous) | 385 | 35 | — | — | 1.33 (1.18, 1.50) | 7.2 x 10-6 |
| EP molecular score (categorical) | 385 | 35 | Low  (<5) | High  (≥ 5) | 1.04 x 108 (0, ∞) | 9.8 x 10-5 |
| Tumor size (categorical) | 385 | 35 | ≤1 cm | >1 to ≤2 cm | 8.38 x 107 (0, ∞) | 2.5 x 10-3 |
| >2 to ≤5 cm | 1.85 x 108 (0, ∞) |
| >5 cm | 1.67 (0, ∞) |
| Nodal status (categorical) | 385 | 35 | Negative | 1-3 nodes | 0.90 (0.44, 1.85) | 0.77 |
| Age at diagnosis (continuous) | 385 | 35 | — | — | 0.92 (0.87, 0.98) | 1.4 x 10-2 |
| Tumor grade (categorical) | 385 | 35 | I | II | 7.04 x 107 (0, ∞) | 1.8 x 10-3 |
| III | 1.60 x 108 (0, ∞) |
| Missing | 0.64 (0, ∞) |
| Ki-67 (continuous) | 369 | 33 | — | — | 1.03 (1.01, 1.04) | 1.5 x 10-3 |
| Ki-67 (categorical) | 385 | 35 | ≤5% | 6-29% | 3.65 (0.84, 15.92) | 0.15 |
| ≥30% | 4.54 (0.96, 21.48) |
| Missing | 4.57 (0.64, 32.75) |
| ER expression (%) (continuous) | 385 | 35 | — | — | 1.00 (0.98, 1.01) | 0.69 |
| PgR expression (%) (continuous) | 381 | 34 | — | — | 0.99 (0.98, 1.00) | 3.3 x 10-2 |

Abbreviations: ER, estrogen receptor; PgR, progesterone receptor.

*Supplemental Table 2: Univariate Cox Proportional Hazards Analysis of Molecular Variables as Predictors of 10-year DRFS for the full cohort excluding patients who either did not receive treatment with endocrine therapy, or endocrine therapy specifics were not available.*

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| --- | --- | --- | --- | --- | --- | --- |
| **Variable** | **N** | **Events** | **Reference** | **Level** | **HR (95% CI)** | **p-value** |
| EPclin score (continuous) | 381 | 34 | — | — | 3.61 (2.26-5.76) | 1.144 x 10-7 |
| EPclin score (categorical) | 381 | 34 | Low  (<3.32867) | High  (≥3.32867) | 4.39 (1.32- 14.60) | 6.454 x 10-3 |
| EP molecular score (continuous) | 381 | 34 | — | — | 1.35 (1.19-1.52) | 4.553 x 10-6 |
| EP molecular score (categorical) | 381 | 34 | Low  (<5) | High  (≥ 5) | ∞ (0.00-∞) | 1.046 x 10-4 |

*Supplemental Table 3. Comparison of the prognostic performance of EPclin in pre-menopausal patients examined in this study with the performance in post-menopausal patients assessed in three former studies. 95% confidence intervals are indicated in brackets.*

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| --- | --- | --- | --- | --- |
|  | **BOCOC/NHU** | **ABCSG-6** | **ABSCG-8** | **TransATAC** |
| Menopausal status | Pre-menopausal | Post-menopausal | Post-menopausal | Post-menopausal |
| N | 385 | 378 | 1324 | 928 |
| 10y DRFS EPclin low | 97% (93 - 99%) | 96% (92 - 99%) | 96% (95 - 98%) | 94% (92 – 96%) |
| 10y DRFS EPclin high | 76% (67 - 82%) | 72% (64 – 80%) | 78% (71 – 85%) | 71% (66 – 76%) |
| Hazard ratio | 4.61 (1.40-15.17) | 7.97 (3.56–17.83) | 4.27 (2.74–6.67) | 5.99 (3.94- 9.11) |
| P value | P=4 x 10-3 | P<1 x 10-3 | P<1 x 10-3 | P<1 x 10-3 |
| Reference | Study herein | Filipits et al., 2011 | Filipits et al., 2011 | Buus et al., 2016 |