

Table S1 Comparative tests of prognostic factors for primary squamous cell carcinoma in thyroid

Characteristics	Gender	Size	Age	T stage	N stage	M stage	Grade	Surgery	Subtype	Chemotherapy
Gender	–	0.290	0.915	0.175	0.341	0.587	0.776	0.156	0.322	0.800
Size	0.290	–	0.882	0.228	0.290	0.672	0.552	0.646	0.094	0.530
Age	0.915	0.882	–	0.370	0.915	0.751	0.013*	0.086	0.132	0.882
T stage	0.175	0.228	0.370	–	0.704	0.672	0.065	0.129	0.244	0.426
N stage	0.341	0.290	0.915	0.704	–	0.036*	0.247	0.760	0.830	0.056
M stage	0.587	0.672	0.751	0.672	0.036	–	0.160	0.045*	0.353	0.184
Grade	0.776	0.552	0.013*	0.065	0.247	0.160	–	0.160	0.059	0.270
Surgery	0.156	0.646	0.086	0.129	0.760	0.045*	0.160	–	0.353	0.021*
Subtype	0.322	0.094	0.132	0.244	0.830	0.353	0.059	0.353	–	0.442
Chemotherapy	0.800	0.530	0.882	0.426	0.056	0.184	0.270	0.021*	0.442	–

*, P<0.05.

Table S2 Univariate Cox proportional hazards analysis stratified by the subgroups of age

Characteristics	Univariate log-rank P value			
	OS (age <70)	OS (age ≥70)	DSS (age <70)	DSS (age ≥70)
Gender				
Female vs. male	0.537	0.754	0.896	0.223
Tumor size				
≥50 vs. <50	0.212	0.021*	0.052	0.019*
EOD				
Yes vs. no/unknown	0.298	0.027*	0.627	0.464
T classification				
T4 vs. T1–3	0.005*	0.006*	0.005*	0.004*
N classification				
N1 vs. N0	0.020*	0.323	0.006*	0.614
M classification				
M1 vs. M0	0.034*	0.165	0.029*	0.782
Grade				
Grade III–IV vs. I–II	<0.001*	0.995	0.001*	0.951
Subtype				
Keratinizing/LCN/SC/MI vs. NOS	0.443	0.163	0.632	0.848
Surgery treatment				
Surgery only vs. no/unknown	0.002*	0.001*	0.015*	0.012*
Surgery + radiation vs. no/unknown	0.011*	<0.001*	0.031*	0.010*
Chemotherapy				
Yes vs. no/unknown	0.030*	0.658	0.001*	0.063

*, P<0.05. OS, overall survival; DSS, disease-specific survival; EOD, extent of disease; LCN, large cell, nonkeratinizing; SC, spindle cell; MI, micro-invasive; NOS, not otherwise specified.

Table S3 Multivariable Cox proportional hazards analysis for DSS stratified by the subgroups of age

Characteristics	DSS (age <70)		DSS (age ≥70)	
	HR (95% CI)	P value	HR (95% CI)	P value
Tumor size				
≥50 vs. <50	1.244 (0.385–2.711)	0.088	1.958 (1.104–5.325)	0.049*
T classification				
T4 vs. T1–3	1.622 (0.713–2.999)	0.055	2.312 (0.911–4.727)	0.070
N classification				
N1 vs. N0	2.048 (1.306–4.217)	0.011*	1.021 (0.403–2.228)	0.066
Surgery treatment				
Surgery only vs. no/unknown	0.474 (0.141–0.623)	0.006*	0.504 (0.177–0.993)	0.001*
Surgery + radiation vs. no/unknown	0.355 (0.241–0.715)	<0.001*	0.611 (0.323–1.025)	0.002*
Chemotherapy				
Yes vs. no/unknown	0.563 (0.218–0.905)	0.010*	0.520 (0.298–1.834)	0.053

*, P<0.05. DSS, disease-specific survival; HR, hazard ratio; CI, confidence interval.

Table S4 Univariate Cox proportional hazards analysis stratified by the subgroups of EOD

Characteristics	Univariate log-rank P value			
	OS (EOD)	OS (no EOD)	DSS (EOD)	DSS (no EOD)
Gender				
Female vs. male	0.965	0.884	0.965	0.685
Age (years old)				
≥70 vs. <70	0.050*	0.017*	0.050*	0.042*
EOD				
Yes vs. no/unknown	0.640	0.892	0.640	0.055
Grade				
Grade III–IV vs. I–II	0.531	0.979	0.531	0.586
Subtype				
Keratinizing/LCN/SC/MI vs. NOS	0.616	0.010*	0.616	0.001*
Surgery treatment				
Surgery only vs. no/unknown	0.754	0.034*	0.754	0.011*
Surgery + radiation vs. no/unknown	0.872	0.045*	0.872	0.016*
Chemotherapy				
Yes vs. no/unknown	0.793	0.756	0.793	0.212

*, P<0.05. EOD, extent of disease; OS, overall survival; DSS, disease-specific survival; LCN, large cell, nonkeratinizing; SC, spindle cell; MI, micro-invasive; NOS, not otherwise specified.

Table S5 Multivariable Cox proportional hazards analysis stratified by the subgroups of no EOD

Characteristics	OS (no EOD)		DSS (no EOD)	
	HR (95% CI)	P value	HR (95% CI)	P value
Age (years old)				
≥70 vs. <70	2.296 (1.302–4.047)	0.058	1.361 (0.813–3.741)	0.055
Subtype				
Keratinizing/LCN/SC/MI vs. NOS	2.024 (0.977–4.193)	0.004*	2.988 (1.788–6.017)	0.007*
Surgery treatment				
Surgery only vs. no/unknown	0.527 (0.241–0.855)	0.021*	0.708 (0.326–0.970)	0.014*
Surgery + radiation vs. no/unknown	0.535 (0.378–0.756)	<0.001*	0.702 (0.446–0.989)	<0.001*

*, P<0.05. EOD, extent of disease; OS, overall survival; DSS, disease-specific survival; HR, hazard ratio; CI, confidence interval; LCN, large cell, nonkeratinizing; SC, spindle cell; MI, micro-invasive; NOS, not otherwise specified.

Table S6 Kaplan-Meier survival analysis stratified by the subgroups of surgery treatment

Characteristics	Univariate log-rank P value					
	OS (SR vs. NS)	DSS (SR vs. NS)	OS (SR vs. SO)	DSS (SR vs. SO)	OS (SO vs. NS)	DSS (SO vs. NS)
EOD						
No	0.003*	0.002*	0.424	0.527	0.107	0.095
Yes	0.244	0.417	0.464	0.384	0.730	0.813
Age						
<70 years old	0.024*	0.023*	0.087	0.071	0.002*	0.001*
≥70 years old	<0.001*	<0.001*	0.008*	0.005*	0.035*	0.004*
T classification						
T1–T3	0.001*	0.001*	0.497	0.502	0.016*	0.012*
T4	0.005*	<0.001*	0.019*	0.007*	0.703	0.693
N classification						
N0	0.017*	0.008*	0.148	0.052	0.193	0.202
N1	0.001*	0.001*	0.022*	0.012*	0.951	0.872

*, P<0.05. OS, overall survival; DSS, disease-specific survival; EOD, extent of disease; SR, surgery with radiation; SO, surgery only; NS, no surgery.