

Supplementary materials

Supplementary Table S1: Patient characteristics by surgical treatment

Characteristics	Surgery (N=718)	No Surgery (N=480)	P-value
Age	62.0±14.6	70.8±13.2	<0.01
Gender			0.10
Female	366	219	
Male	352	261	
Ethnicity			0.61
White	616	403	
Black	72	55	
Other(American Indian/AK Native, Asian/Pacific Islander)	28	22	
Unknown	2	0	
Pathological Differentiation			<0.01
Well	29	17	
Moderate	181	33	
Poor	333	124	
Undifferentiated	42	17	
Unknown	133	289	
Laterality			0.75
Left	304	184	
Right	412	260	
Bilateral	2	12	
Unknown	0	24	
Primary Site			<0.01
Main Bronchus	0	26	
Upper Lobe, Lung	438	225	
Middle Lobe, Lung	44	20	
Lower Lobe, Lung	206	93	
Overlapping Lesion of Lung	15	6	
Lung, NOS	125	110	

Tumor Size				<0.01
	T1	237	31	
	T2	327	64	
	T3	42	29	
	T4	45	124	
	Unknown	67	232	
Tumor Size (mm)		36.7±21.9	47.7±26.1	<0.01
Lymph Node Metastases				<0.01
	N0	483	86	
	N1	100	22	
	N2	94	164	
	N3	3	12	
	Unknown	38	132	
Distant Metastases				<0.01
	Yes	30	286	
	No	677	157	
	Unknown	11	37	
Summary Stage				<0.01
	Localized	354	31	
	Regional	318	79	
	Distant	37	344	
	Unknown	9	26	
TNM Stage				<0.01
	I	322	17	
	II	87	6	
	III	125	114	
	IV	30	286	
	Unknown	66	57	
Radiation				<0.01
	Yes	121	238	
	No	582	232	
	Unknown	15	10	

Supplementary Table S2: Patient characteristics by radiation treatment

Characteristics	Radiation (N=359)	No Radiation (N=818)	P-value
Age	62.4±11.1	66.4±10.6	<0.01
Gender			0.98
Female	175	398	
Male	184	420	
Ethnicity			0.86
White	304	696	
Black	38	87	
Other(American Indian/AK Native, Asian/Pacific Islander)	17	33	
Unknown	0	2	
Pathological Differentiation			<0.01
Well	12	34	
Moderate	36	174	
Poor	133	314	
Undifferentiated	19	38	
Unknown	159	258	
Laterality			0.57
Left	144	336	
Right	205	453	
Bilateral	6	8	
Unknown	4	21	
Primary Site			0.20
Main Bronchus	17	10	
Upper Lobe, Lung	211	437	
Middle Lobe, Lung	12	51	
Lower Lobe, Lung	72	223	
Overlapping Lesion of Lung	8	13	
Lung, NOS	39	84	
Tumor Size			<0.01
T1	40	224	
T2	92	289	
T3	31	37	
T4	65	103	
Unknown	131	165	

Tumor Size (mm)		46.8±24.3	36.9±22.3	<0.01
Lymph Node Metastases				<0.01
	N0	81	481	
	N1	46	72	
	N2	134	119	
	N3	41	36	
	Unknown	57	110	
Distant Metastases				<0.01
	Yes	156	156	
	No	189	630	
	Unknown	14	32	
Summary Stage				<0.01
	Localized	29	352	
	Regional	138	250	
	Distant	186	190	
	Unknown	6	26	
TNM Stage				<0.01
	I	29	393	
	II	34	56	
	III	108	124	
	IV	156	156	
	Unknown	32	89	
Surgery				0.87
	Yes	121	582	
	No	238	232	
	Unknown	0	4	

Supplementary Table S3: Patient characteristics for CCAL and non-CCAL adenocarcinoma after PSM analysis

Characteristics	CCAL (N=787)	Non-CCAL (N=787)	P-value
Age	66.6±9.90	66.7±9.94	0.92
Gender			0.65
Female	378 (48.0%)	387 (48.0%)	
Male	409 (52.0%)	400 (52.0%)	
Ethnicity			0.17
White	672 (85.4%)	651 (82.7%)	
Black	80 (10.2%)	80 (10.2%)	
Other(American Indian/AK Native, Asian/Pacific Islander)	35 (4.4%)	56 (7.1%)	
Pathological Differentiation			0.83
Well	25 (4.9%)	18 (3.6%)	
Moderate	155 (30.5%)	155 (31.4%)	
Poor	321(63.3%)	315 (63.8%)	
Undifferentiated	6 (1.3%)	6 (1.2%)	
Unknown	280	293	
Laterality			0.77
Left	301 (39.4%)	308 (40.4%)	
Right	459 (59.7%)	446 (58.5%)	
Bilateral	9 (10.9%)	9 (1.1%)	
Unknown	18	24	
Primary Site			0.87
Main Bronchus	14 (2.0%)	18 (26.1%)	
Upper Lobe, Lung	461 (65.6%)	453(65.6%)	
Middle Lobe, Lung	38 (5.4%)	35 (5.1%)	
Lower Lobe, Lung	186 (26.5%)	181 (4.8%)	
Overlapping Lesion of Lung	4 (0.5%)	3 (0.4%)	
Lung, NOS	84	97	
Tumor Size (mm)	38.9±23.3	39.7±23.0	0.61
Tumor Size			0.98
T1	216 (35.0%)	214 (34.9%)	
T2	260 (42.0%)	254 (42.1%)	
T3	40 (6.5%)	37 (6.5%)	
T4	102 (16.5%)	108 (16.5%)	
Unknown	169	174	

Lymph Node Metastases				0.99
	N0	418 (60.3%)	419 (60.8%)	
	N1	58 (8.4%)	60 (4.9%)	
	N2	172 (24.8%)	167 (24.2%)	
	N3	45 (6.5%)	43 (6.2%)	
	Unknown	94	98	
Distant Metastases				0.42
	Yes	224 (29.3%)	237 (30.7%)	
	No	541 (70.7%)	535 (69.3%)	
	Unknown	22	15	
Summary Stage				0.46
	Localized	285 (37.2%)	291 (37.6%)	
	Regional	217 (28.3%)	201 (26.0%)	
	Distant	264 (34.5%)	281 (36.4%)	
	Unknown	21	14	
TNM Stage				0.89
	I	341 (45.7%)	341 (45.2%)	
	II	50 (6.7%)	47 (6.2%)	
	III	131 (17.6%)	130 (17.2%)	
	IV	224 (30.0%)	237 (31.4%)	
	Unknown	41	32	
Surgery				0.58
	No	323 (41.1%)	316 (40.3%)	
	Yes	463 (58.9%)	468 (59.7%)	
	Unknown	1	3	
Radiation				0.87
	Yes	571 (72.6%)	582 (74.3%)	
	No	215 (27.4%)	201 (25.7%)	
	Unknown	1	4	

Supplementary Table S4: Patient characteristics for CCAL patients with or without radiotherapy after PSM analysis

Characteristics	Radiation (N=220)	Non- Radiation (N=220)	P-value
Age	63.7±11.3	64.0±11.1	0.78
Gender			0.51
Female	95	97	
Male	125	123	
Ethnicity			0.23
White	185	179	
Black	26	33	
Other(American Indian/AK Native, Asian/Pacific Islander)	9	8	
Unknown	0	0	
Pathological Differentiation			0.91
Well	7	6	
Moderate	23	32	
Poor	89	83	
Undifferentiated	13	7	
Unknown	88	92	
Laterality			0.44
Left	95	89	
Right	123	121	
Bilateral	1	3	
Unknown	1	7	
Primary Site			0.20
Main Bronchus	6	5	
Upper Lobe, lung	136	116	
Middle Lobe, lung	5	9	
Lower Lobe, lung	50	56	
Overlapping lesion of lung	5	3	
Lung, NOS	18	31	
Tumor Size			0.29
T1	28	26	
T2	62	53	
T3	23	22	
T4	34	59	
Unknown	73	60	
Tumor Size (mm)	44.2±24.4	45.5±25.7	0.62

Lymph Node Metastases				0.49
	N0	42	46	
	N1	41	44	
	N2	82	74	
	N3	21	24	
	Unknown	34	32	
Distant Metastases				0.27
	Yes	87	90	
	No	127	124	
	Unknown	6	6	
Summary Stage				0.87
	Localized	17	17	
	Regional	99	95	
	Distant	101	105	
	Unknown	3	3	
TNM Stage				0.65
	I	12	13	
	II	31	35	
	III	71	67	
	IV	87	90	
	Unknown	19	15	
Surgery				0.87
	Yes	100	96	
	No	220	124	
	Unknown	0	0	

Supplementary Table S5: Patient characteristics for CCAL patients with or without radiotherapy after surgery after PSM analysis

Characteristics	Radiation (N=107)	Non-Radiation (N=107)	p-value
Age	60.6±9.60	62.7±10.9	0.13
Gender			0.41
Female	57	51	
Male	50	56	
Ethnicity			0.52
White	94	92	
Black	8	12	
Other(American Indian/AK Native, Asian/Pacific Islander)	5	3	
Unknown	0	0	
Pathological Differentiation			0.85
Well	4	2	
Moderate	21	23	
Poor	55	59	
Undifferentiated	8	8	
Unknown	19	15	
Laterality			0.44
Left	42	44	
Right	64	63	
Bilateral	1	0	
Unknown	0	0	
Primary Site			0.35
Main Bronchus	0	0	
Upper Lobe, Lung	73	61	
Middle Lobe, Lung	3	8	
Lower Lobe, Lung	25	30	
Overlapping Lesion of Lung	4	4	
Lung, NOS	2	4	
Tumor Size			0.38
T1	20	19	
T2	49	46	
T3	13	13	
T4	8	17	
Unknown	17	12	

Tumor Size (mm)		41.8±21.3	45.4±24.1	0.26
Lymph Node Metastases				0.59
	N0	30	25	
	N1	34	43	
	N2	36	32	
	N3	0	1	
	Unknown	7	6	
Distant Metastases				0.93
	Yes	8	8	
	No	95	96	
	Unknown	4	3	
Summary Stage				0.96
	Localized	14	15	
	Regional	81	78	
	Distant	9	11	
	Unknown	3	3	
TNM Stage				0.89
	I	16	15	
	II	29	36	
	III	42	37	
	IV	8	8	
	Unknown	12	11	

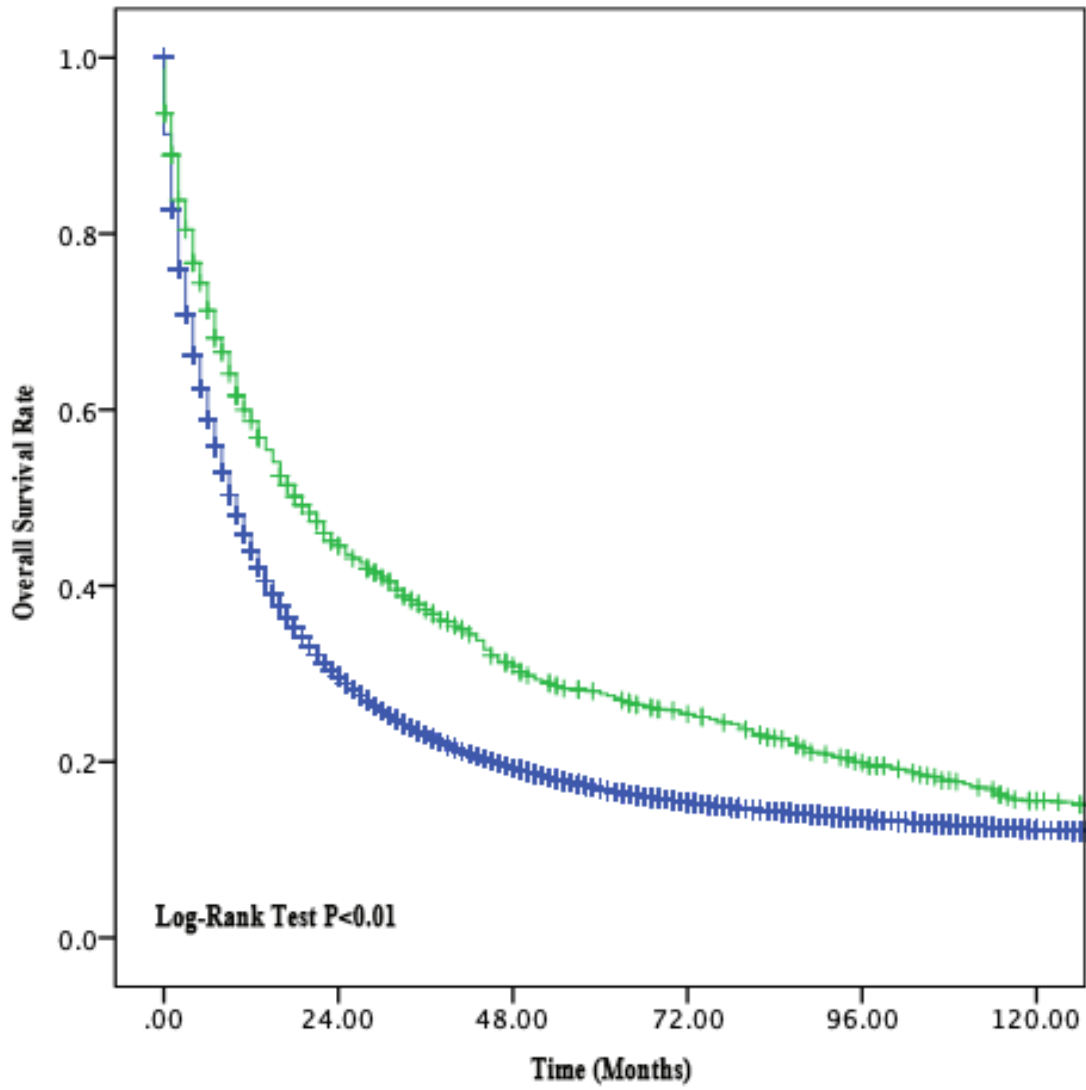


Figure S1 OS for CCAL patients and lung adenocarcinoma patients in unmatched cohort.

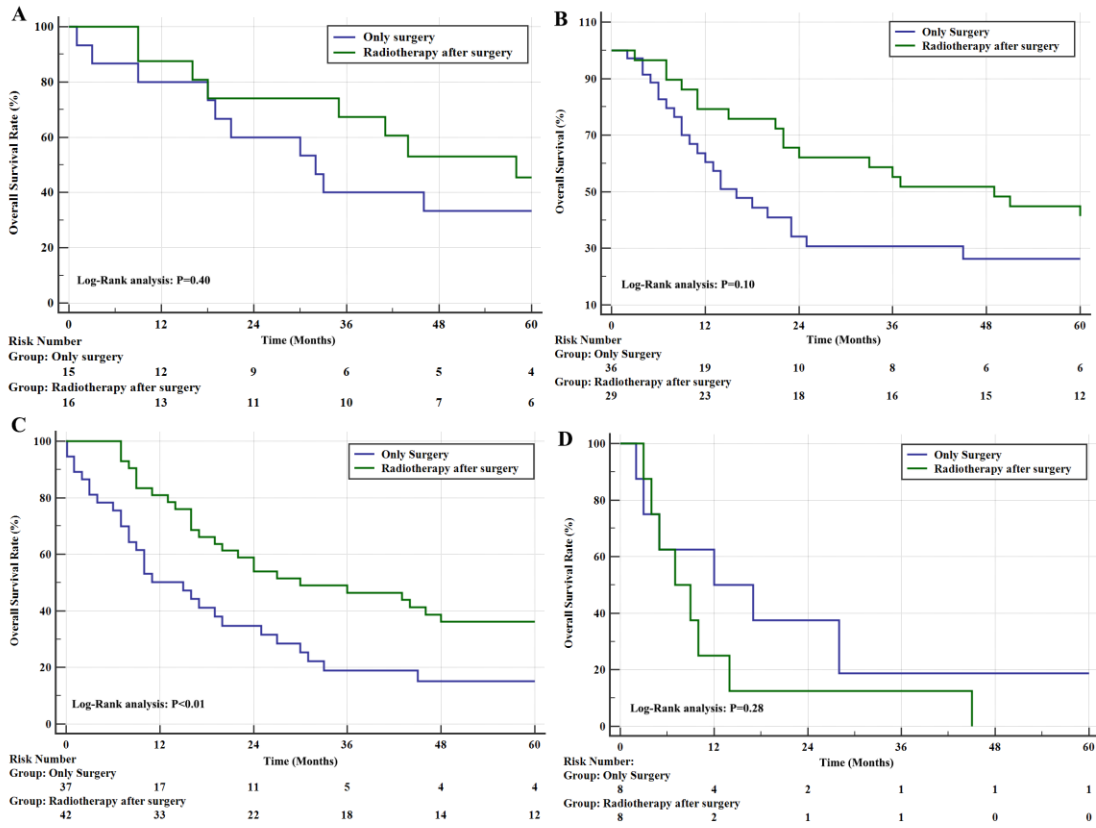


Figure S2 OS for CCAL patients with/without radiotherapy after surgery (A:I stage, B: II stage, C: III stage, D: IV stage).

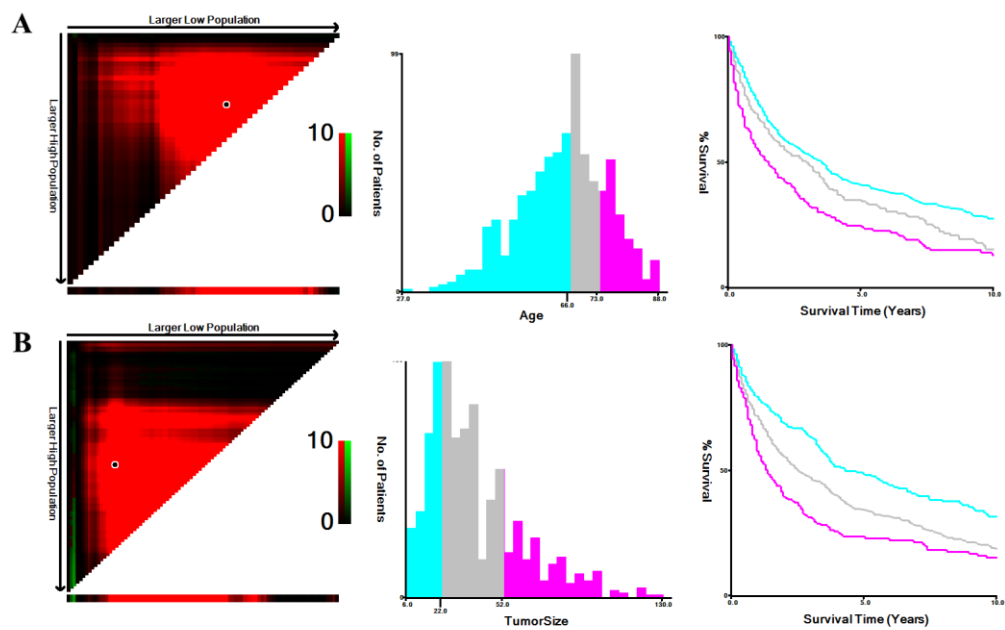


Figure S3 The optimal cut-off of Age (A) and tumor size (B) in CCAL patients using X-tile software. The optimal cut-point of Age and tumor size is shown on the histogram and corresponding population are presented on the Kaplan-Meier curve.

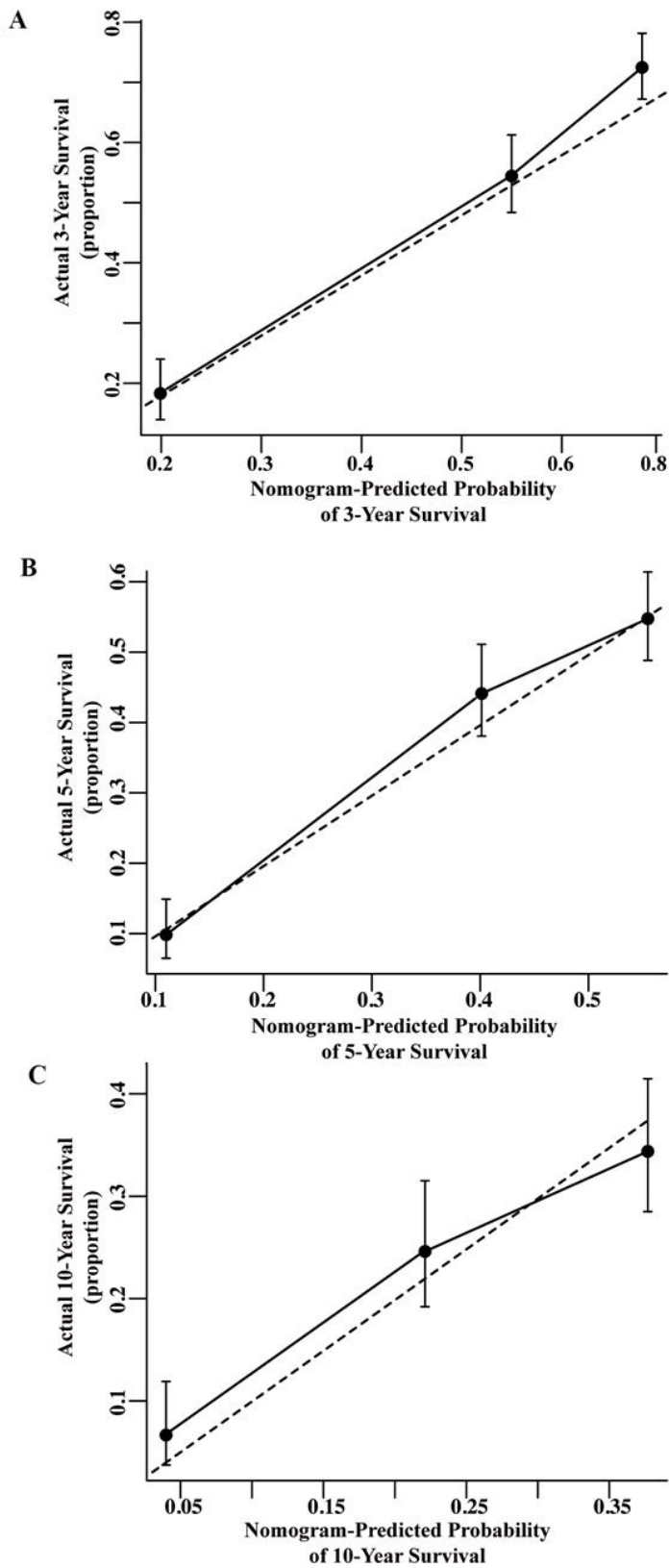


Figure S4 The calibration curve for predicting CCAL patients survival at (A) 3 years and (B) 5 years, and (C) 10 years in the primary cohort. Nomogram-predicted probability of overall survival is plotted on the X-axis, actual overall survival is plotted on the Y-axis.