



Figure S1 Standardized differences of variables between patients who received lobar resection and sublobar resection before and after IPTW. SMD, standardized mean difference; IPTW, inverse probability of treatment weight.

Table S1 Univariate and multivariate Cox regression analysis of the OS before PSM

Variables	Level	Univariate			Multivariate		
		HR	95% CI	P	HR	95% CI	P
Age	20–54 years	Reference			Reference		
	55–64 years	1.313	0.825–2.089	0.25	1.207	0.757–1.925	0.43
	65–74 years	1.644	1.069–2.530	0.02	1.402	0.906–2.167	0.13
	75–84 years	2.651	1.696–4.144	<0.001	2.056	1.292–3.273	0.002
	85+ years	2.603	1.247–5.433	0.01	1.808	0.856–3.818	0.12
Sex	Female	Reference			Reference		
	Male	1.734	1.384–2.173	<0.001	1.611	1.281–2.026	<0.001
Year of diagnosis	2004–2005	Reference					
	2006–2007	0.826	0.572–1.192	0.31			
	2008–2009	1.000	0.687–1.457	>0.99			
	2010–2011	0.961	0.651–1.418	0.84			
	2012–2013	0.612	0.391–0.959	0.03			
	2014–2015	0.595	0.359–0.985	0.044			
Race	Black	Reference					
	Other	0.579	0.285–1.178	0.13			
	White	1.175	0.752–1.834	0.48			
	Unknown	0	0–Inf	>0.99			
Laterality	Left	Reference					
	Right	0.855	0.682–1.072	0.17			
Location	Lower lobe	Reference					
	Lung	2.08	0.852–5.08	0.11			
	Middle lobe	1.019	0.622–1.667	0.94			
	Upper lobe	1.26	0.995–1.594	0.06			
	Overlapping lesion of lung	2.039	0.649–6.406	0.22			
Grade	Grade I	Reference			Reference		
	Grade II	0.516	0.396–0.672	<0.001	1.840	1.408–2.405	<0.001
	Grade III	1.991	1.239–3.2	0.004	3.566	2.22–5.728	<0.001
	Grade IV	0.947	0.132–6.794	0.96	2.267	0.313–16.412	0.42
	Unknown	0.815	0.585–1.133	0.22	1.461	1.065–2.004	0.02
Radiotherapy	No/unknown	Reference			Reference		
	Yes	1.926	1.025–3.619	0.042	0.900	0.452–1.792	0.76
Chemotherapy	No/unknown	Reference			Reference		
	Yes	2.232	1.386–3.596	0.001	1.900	1.137–3.173	0.01
Lymphadenectomy	No	Reference			Reference		
	Yes	0.654	0.504–0.849	0.001	0.705	0.514–0.966	0.03
Surgery	Lobectomy	Reference			Reference		
	Sublobectomy	1.371	1.091–1.724	0.007	1.102	0.835–1.454	0.49
No. malignancy		1.279	1.169–1.399	<0.001	1.18	1.072–1.298	0.001

OS, overall survival; PSM, propensity score matching; HR, hazard ratio; CI, confidence interval.

Table S2 Univariate and multivariate Cox regression analysis of the OS after PSM

Variables	Level	Univariate			Multivariate		
		HR	95% CI	P	HR	95% CI	P
Age	20–54 years	Reference			Reference		
	55–64 years	1.256	0.518–3.044	0.61	0.969	0.397–2.366	0.95
	65–74 years	1.241	0.53–2.907	0.62	0.936	0.396–2.21	0.88
	75–84 years	2.065	0.875–4.875	0.10	1.408	0.587–3.381	0.44
	85+ years	2.432	0.810–7.300	0.11	1.954	0.642–5.945	0.24
Sex	Female	Reference			Reference		
	Male	1.706	1.21–2.406	0.002	1.769	1.245–2.515	0.001
Year of diagnosis	2004–2005	Reference					
	2006–2007	0.768	0.41–1.437	0.41			
	2008–2009	1.051	0.559–1.976	0.88			
	2010–2011	1.214	0.655–2.252	0.54			
	2012–2013	0.822	0.412–1.639	0.58			
	2014–2015	0.932	0.455–1.909	0.85			
Race	Black	Reference					
	Other	0.55	0.117–2.592	0.45			
	White	1.144	0.559–2.342	0.71			
	Unknown	0	0–Inf	>0.99			
Laterality	Left	Reference					
	Right	0.921	0.652–1.301	0.64			
Location	Lower lobe	Reference					
	Lung	1.558	0.216–11.256	0.66			
	Middle lobe	1.129	0.455–2.799	0.79			
	Upper lobe	1.169	0.819–1.668	0.39			
	Overlapping lesion of lung	2.562	0.623–10.54	0.19			
Grade	Grade I	Reference			Reference		
	Grade II	1.455	0.968–2.187	0.07	1.388	0.915–2.106	0.12
	Grade III	6.189	2.807–13.648	<0.001	6.427	2.832–14.585	<0.001
	Grade IV	1.517	0.21–10.962	0.68	2.034	0.276–14.995	0.49
	Unknown	1.246	0.787–1.971	0.35	1.156	0.723–1.848	0.54
Radiotherapy	No/unknown	Reference			Reference		
	Yes	1.536	0.628–3.756	0.35	1.244	0.479–3.227	0.65
Chemotherapy	No/unknown	Reference			Reference		
	Yes	2.534	1.113–5.769	0.03	2.28	0.939–5.537	0.07
Lymphadenectomy	No	Reference			Reference		
	Yes	0.603	0.381–0.953	0.03	0.705	0.514–0.966	0.03
Surgery	Lobectomy	Reference			Reference		
	Sublobectomy	1.144	0.813–1.609	0.44	1.141	0.803–1.62	0.46
No. malignancy		1.264	1.113–1.436	<0.001	1.238	1.083–1.416	0.002

OS, overall survival; PSM, propensity score matching; HR, hazard ratio; CI, confidence interval.

Table S3 Univariate and multivariate Cox regression analysis of the OS after IPTW

Variables	Level	Univariate			Multivariate		
		HR	95% CI	P	HR	95% CI	P
Age	20–54 years	Reference			Reference		
	55–64 years	1.115	0.608–2.045	0.72	0.962	0.538–1.720	0.90
	65–74 years	1.491	0.829–2.682	0.18	1.135	0.671–1.920	0.64
	75–84 years	1.879	1.044–3.38	0.04	1.276	0.697–2.337	0.43
	85+ years	2.483	1.191–5.177	0.02	2.005	0.986–4.074	0.06
Sex	Female	Reference			Reference		
	Male	1.925	1.352–2.739	<0.001	1.815	1.333–2.471	<0.001
Year of diagnosis	2004–2005	Reference					
	2006–2007	0.714	0.442–1.153	0.17			
	2008–2009	0.803	0.483–1.336	0.40			
	2010–2011	1.248	0.701–2.224	0.45			
	2012–2013	0.629	0.340–1.163	0.14			
	2014–2015	0.523	0.273–1.002	0.051			
Race	Black	Reference					
	Other	0.704	0.269–1.845	0.48			
	White	1.154	0.607–2.193	0.66			
	Unknown	NA	NA	NA			
Laterality	Left	Reference					
	Right	0.997	0.685–1.452	0.99			
Location	Lower lobe	Reference					
	Lung	2.250	0.699–7.24	0.17			
	Middle lobe	0.921	0.516–1.644	0.78			
	Upper lobe	1.358	0.917–2.011	0.13			
	Overlapping lesion of lung	2.755	0.856–8.861	0.09			
Grade	Grade I	Reference			Reference		
	Grade II	1.701	1.023–2.83	0.041	1.497	0.999–2.243	0.051
	Grade III	5.111	3.017–8.658	<0.001	5.088	2.91–8.894	<0.001
	Grade IV	1.579	0.28–8.896	0.61	2.152	0.404–11.465	0.37
	Unknown	1.551	1.064–2.259	0.02	1.535	1.055–2.234	0.03
Radiotherapy	No/Unknown	Reference			Reference		
	Yes	2.629	0.968–7.138	0.058	1.513	0.66–3.468	0.33
Chemotherapy	No/Unknown	Reference			Reference		
	Yes	2.575	1.344–4.93	0.004	1.957	1.013–3.78	0.046
Lymphadenectomy	No	Reference			Reference		
	Yes	0.565	0.351–0.909	0.02	0.679	0.465–0.991	0.045
Surgery	Lobectomy	Reference			Reference		
	Sublobectomy	0.938	0.65–1.353	0.73	1.087	0.818–1.446	0.57
No. malignancy		1.27	1.1–1.466	0.001	1.214	1.063–1.385	0.004

OS, overall survival; IPTW, inverse probability of treatment weight; HR, hazard ratio; CI, confidence interval.

Table S4 Univariate and multivariate Cox regression analysis of the CSS before PSM

Variables	Level	Univariate			Multivariate		
		HR	95% CI	P	HR	95% CI	P
Age	20–54 years	Reference			Reference		
	55–64 years	0.815	0.464–1.430	0.48	0.748	0.425–1.316	0.31
	65–74 years	1.152	0.701–1.894	0.58	0.975	0.588–1.619	0.92
	75–84 years	1.395	0.809–2.405	0.23	1.153	0.651–2.045	0.63
	85+ years	0.910	0.270–3.070	0.88	0.669	0.196–2.286	0.52
Sex	Female	Reference			Reference		
	Male	1.315	0.964–1.793	0.08	1.236	0.902–1.694	0.19
Year of diagnosis	2004–2005	Reference					
	2006–2007	0.732	0.441–1.215	0.23			
	2008–2009	0.893	0.541–1.474	0.66			
	2010–2011	0.828	0.493–1.389	0.48			
	2012–2013	0.566	0.316–1.013	0.055			
	2014–2015	0.38	0.185–0.781	0.01			
Race	Black	Reference					
	Other	0.358	0.129–0.996	0.049			
	White	0.909	0.525–1.574	0.73			
	Unknown	0	0–Inf	0.99			
Laterality	Left	Reference					
	Right	0.792	0.581–1.079	0.14			
Location	Lower lobe	Reference					
	Lung	1.694	0.415–6.914	0.46			
	Middle lobe	1.305	0.69–2.467	0.41			
	Upper lobe	1.456	1.053–2.013	0.02			
	Overlapping lesion of lung	1.423	0.197–10.26	0.77			
Grade	Grade I	Reference			Reference		
	Grade II	2.239	1.566–3.201	<0.001	2.163	1.504–3.110	<0.001
	Grade III	3.447	1.766–6.728	<0.001	2.994	1.509–5.941	0.002
	Grade IV	3.48	0.482–25.107	0.22	3.765	0.512–27.689	0.19
	Unknown	1.661	1.072–2.574	0.02	1.59	1.022–2.474	0.04
Radiotherapy	No/Unknown	Reference			Reference		
	Yes	2.201	0.973–4.978	0.058	0.798	0.321–1.986	0.63
Chemotherapy	No/Unknown	Reference			Reference		
	Yes	3.914	2.334–6.564	<0.001	3.309	1.875–5.84	<0.001
Lymphadenectomy	No	Reference			Reference		
	Yes	0.652	0.456–0.932	0.02	0.743	0.482–1.146	0.18
Surgery	Lobectomy	Reference			Reference		
	Sublobectomy	1.425	1.043–1.949	0.03	1.206	0.826–1.762	0.33
No. malignancy		1.254	1.106–1.423	<0.001	1.186	1.035–1.359	0.01

CSS, cancer-specific survival; PSM, propensity score matching; HR, hazard ratio; CI, confidence interval.

Table S5 Univariate and multivariate Cox regression analysis of the CSS after PSM

Variables	Level	Univariate			Multivariate		
		HR	95% CI	P	HR	95% CI	P
Age	20–54 years	Reference			Reference		
	55–64 years	0.793	0.287–2.187	0.65	0.658	0.234–1.847	0.43
	65–74 years	0.705	0.268–1.853	0.48	0.541	0.202–1.453	0.22
	75–84 years	0.942	0.346–2.567	0.91	0.689	0.243–1.957	0.49
	85+ years	0.403	0.047–3.469	0.41	0.384	0.044–3.358	0.39
Sex	Female	Reference			Reference		
	Male	1.235	0.75–2.036	0.41	1.376	0.823–2.3	0.22
Year of diagnosis	2004–2005	Reference					
	2006–2007	0.821	0.364–1.852	0.63			
	2008–2009	0.612	0.248–1.512	0.29			
	2010–2011	0.886	0.386–2.035	0.78			
	2012–2013	0.603	0.236–1.541	0.29			
	2014–2015	0.432	0.148–1.259	0.12			
Race	Black	Reference					
	Other	0	0–Inf	1.00			
	White	0.579	0.263–1.273	0.17			
	Unknown	0	0–Inf	1.00			
Laterality	Left	Reference					
	Right	0.86	0.519–1.424	0.56			
Location	Lower lobe	Reference					
	Lung	3.669	0.496–27.159	0.20			
	Middle lobe	1.665	0.506–5.479	0.40			
	Upper lobe	1.532	0.911–2.577	0.11			
	Overlapping lesion of lung	3.304	0.443–24.635	0.24			
Grade	Grade I	Reference			Reference		
	Grade II	1.307	0.698–2.447	0.40	1.335	0.702–2.54	0.38
	Grade III	7.677	2.653–22.214	<0.001	6.049	1.944–18.816	0.002
	Grade IV	3.207	0.435–23.662	0.25	3.614	0.472–27.692	0.22
	Unknown	1.495	0.786–2.844	0.22	1.415	0.729–2.746	0.30
Radiotherapy	No/unknown	Reference			Reference		
	Yes	1.913	0.599–6.113	0.27	1.048	0.29–3.783	0.94
Chemotherapy	No/unknown	Reference			Reference		
	Yes	5.481	2.345–12.81	<0.001	4.364	1.64–11.611	0.003
Lymphadenectomy	No	Reference			Reference		
	Yes	0.808	0.384–1.699	0.57	0.705	0.514–0.966	0.03
Surgery	Lobectomy	Reference			Reference		
	Sublobectomy	1.359	0.822–2.248	0.23	1.305	0.778–2.188	0.31
No. malignancy		1.237	1.023–1.496	0.03	1.24	1.011–1.521	0.04

CSS, cancer-specific survival; PSM, propensity score matching; HR, hazard ratio; CI, confidence interval.

Table S6 Univariate and multivariate Cox regression analysis of the CSS after IPTW

Variables	Level	Univariate			Multivariate		
		HR	95% CI	P	HR	95% CI	P
Age	20–54 years	Reference			Reference		
	55–64 years	0.706	0.334–1.493	0.36	0.596	0.289–1.228	0.16
	65–74 years	0.752	0.411–1.377	0.36	0.651	0.349–1.216	0.18
	75–84 years	0.801	0.407–1.579	0.52	0.633	0.297–1.346	0.24
	85+ years	0.589	0.141–2.462	0.47	0.559	0.129–2.416	0.44
Sex	Female	Reference			Reference		
	Male	1.385	0.902–2.127	0.14	1.451	0.947–2.223	0.09
Year of diagnosis	2004–2005	Reference					
	2006–2007	0.624	0.324–1.199	0.16			
	2008–2009	0.63	0.31–1.278	0.20			
	2010–2011	0.818	0.395–1.695	0.59			
	2012–2013	0.51	0.237–1.097	0.09			
	2014–2015	0.313	0.122–0.804	0.02			
Race	Black	Reference					
	Other	0.209	0.069–0.635	0.01			
	White	0.635	0.311–1.294	0.21			
	Unknown	0	0–0	0.00			
Laterality	Left	Reference					
	Right	0.822	0.538–1.257	0.37			
Location	Lower lobe	Reference					
	Lung	2.776	0.547–14.089	0.22			
	Middle lobe	1.321	0.595–2.934	0.49			
	Upper lobe	1.377	0.881–2.153	0.16			
	Overlapping lesion of lung	1.35	0.329–5.543	0.68			
Grade	Grade I	Reference			Reference		
	Grade II	1.476	0.883–2.468	0.14	1.482	0.895–2.454	0.13
	Grade III	6.008	2.816–12.815	<0.001	4.402	1.904–10.177	0.00
	Grade IV	3.26	0.569–18.671	0.18	3.497	0.605–20.195	0.16
	Unknown	0.815	0.585–1.133	0.22	1.648	0.977–2.779	0.06
Radiotherapy	No/unknown	Reference			Reference		
	Yes	0.517	0.136–1.972	0.33	0.4	0.112–1.423	0.16
Chemotherapy	No/unknown	Reference			Reference		
	Yes	5.168	2.666–10.017	<0.001	4.093	2.03–8.254	<0.001
Lymphadenectomy	No	Reference			Reference		
	Yes	0.954	0.524–1.739	0.88	0.859	0.476–1.551	0.61
Surgery	Lobectomy	Reference			Reference		
	Sublobectomy	1.358	0.89–2.07	0.16	1.439	0.966–2.143	0.07
No. malignancy		1.243	1.026–1.505	0.03	1.265	1.043–1.534	0.02

CSS, cancer-specific survival; IPTW, inverse probability of treatment weight; HR, hazard ratio; CI, confidence interval.