

Supplemental Online Content

Heiden BT, Eaton DB Jr, Engelhardt KE, et al. Analysis of delayed surgical treatment and oncologic outcomes in clinical stage I non–small cell lung cancer. *JAMA Netw Open*. 2021;4(5):e2111613. doi:10.1001/jamanetworkopen.2021.11613

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This supplemental material has been provided by the authors to give readers additional information about their work.

eAppendix. Supplementary Methods

Spline knots and locations.

Each spline model was constructed using 5 knots with the following locations:

Knots for Spline Models	
Knot Number	TTS (days)
1	23.0
2	42.0
3	62.0
4	88.0
5	148.0

Testing proportional hazards assumption for time variables.

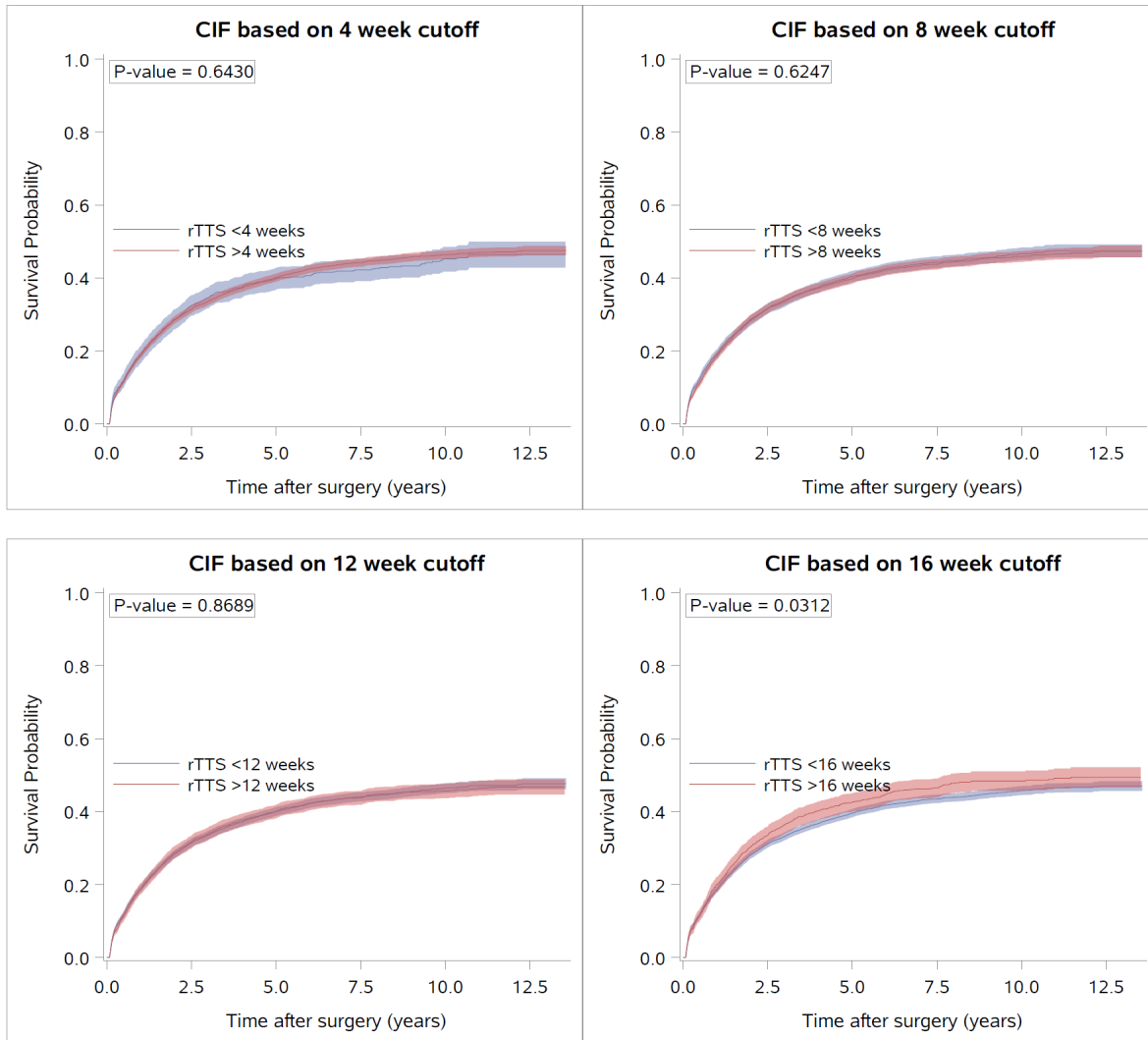
ZPH tests for delay variable (>12 weeks) and spline terms in both cox proportional hazards model and recurrence competing risk model. (Note: a p-value of less than 0.05 indicates a violation of the PH assumption.)

ZPH Test for Nonproportional Hazards (Overall Survival)	
Time variable	P-value
Delayed surgery (>12 weeks)	0.2639
Spline term (#1)	0.3559
Spline term (#2)	0.3981
Spline term (#3)	0.4703
Spline term (#4)	0.6400

ZPH Test for Nonproportional Hazards (Recurrence)	
Time variable	P-value
Delayed surgery (>12 weeks)	0.4551
Spline term (#1)	0.1345
Spline term (#2)	0.2480
Spline term (#3)	0.2514
Spline term (#4)	0.2482

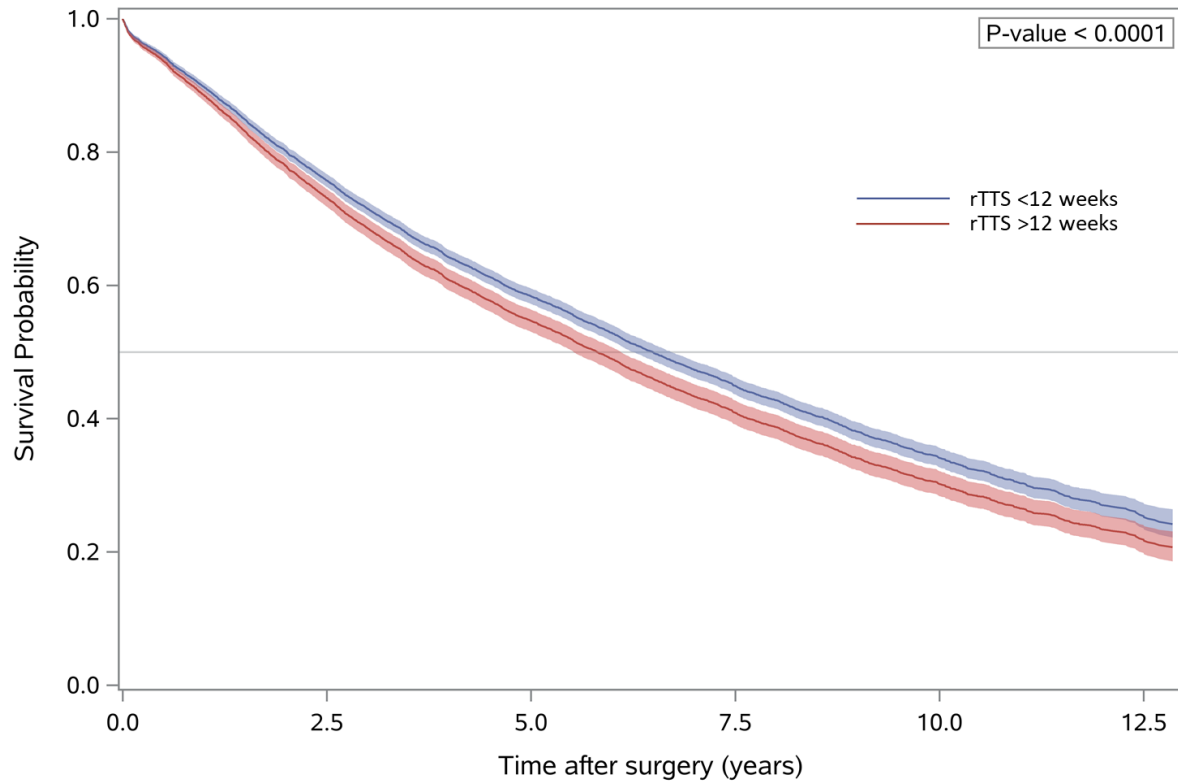
eFigure 1. Cumulative Incidence Function for Recurrence.

Cumulative incidence function for recurrence using multivariable competing risk model based on several rTTS cutoffs (4-, 8-, 12-, 16-weeks).



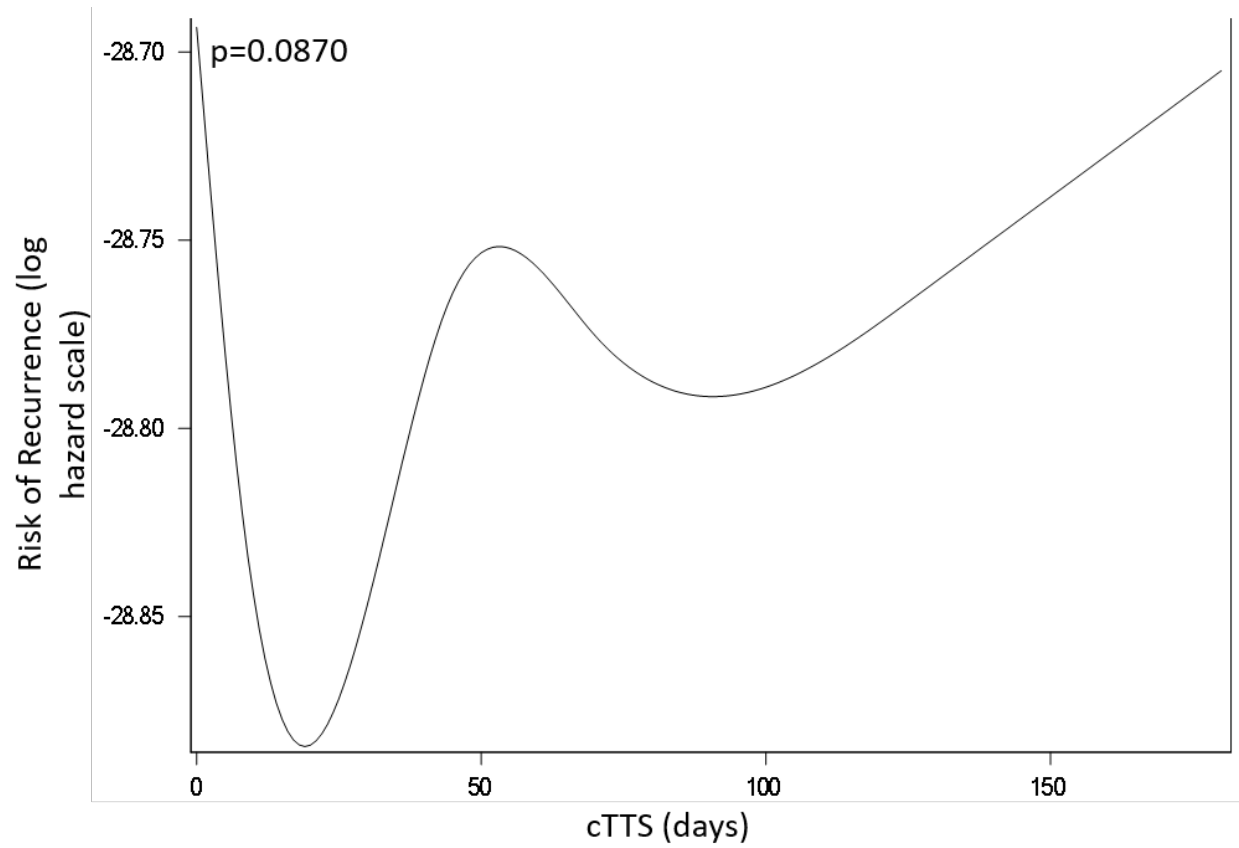
eFigure2. Direct Adjusted Survival Curve Following Delayed Surgical Treatment

Multivariable direct adjusted overall survival curve for clinical stage I NSCLC patients with delayed (>12 weeks) versus non-delayed (<12 weeks) surgery.



eFigure3. Association between Clinical Time to Surgical Treatment and Probability of Recurrence

Restricted cubic spline model for relationship between cTTS and recurrence.



eTable 1. Multivariable Analysis of Factors Associated With Upstaging				
Variable	Odds Ratio	95% Wald Confidence Limits		P-value
Age, y	0.985	0.975	0.996	0.0061
Female vs male, sex	1.022	0.715	1.461	0.9062
Race (reference = white)				
Black	1.069	0.886	1.289	0.1739
Other	0.678	0.347	1.323	0.2178
BMI	1.022	1.009	1.035	0.0011
Smoking status (reference = current)				
Former	1.028	0.889	1.188	0.8602
Never	0.980	0.436	2.203	0.9342
CCI	1.003	0.968	1.039	0.8876
ADI	1.006	1.001	1.011	0.0161
Surgical year, y	1.040	1.014	1.067	0.0027
Yearly hospital caseload, y	1.001	1.000	1.002	0.1459
EBUS or mediastinoscopy vs none	1.148	0.971	1.357	0.1066
Type of operation (reference = lobectomy)				
Pneumonectomy	3.528	2.415	5.153	<.0001
Segmentectomy	0.620	0.431	0.892	<.0001
Wedge	0.826	0.678	1.007	0.0004
Incision type (reference = thoracotomy)				
VATS	0.878	0.754	1.022	0.0010
Unknown	1.318	1.045	1.663	0.0024
Histology (reference = adenocarcinoma)				
Squamous cell carcinoma	0.721	0.618	0.841	0.0073
Other	0.816	0.652	1.021	0.7168
Grade (reference = I)				
II	2.447	1.859	3.302	0.0907
III	3.145	2.341	4.224	<.0001
IV	2.638	1.405	4.954	0.3304
Tumor size (reference = 0-10mm)				
11-20mm	1.076	0.791	1.464	<.0001
21-30mm	1.645	1.206	2.242	0.0689
31-40mm	1.734	1.250	2.407	0.0273
40+ mm	2.545	1.789	3.619	<.0001
Unknown	1.138	0.662	1.957	0.2395
Lymph node collection (reference <10)				
≥10	1.476	1.275	1.709	0.0091
Unknown	1.352	1.017	1.797	0.4481

ADI, area deprivation index; CCI, Charlson comorbidity index; EBUS, endobronchial ultrasound;

VATS, video-assisted thoracoscopic surgery

eTable 2. Multivariable Analysis of Factors Associated With Positive Surgical Margin				
Variable	Odds Ratio	95% Wald Confidence Limits		P-value
Age, y	0.983	0.965	1.002	0.0763
Female vs male, sex	1.410	0.767	2.592	0.2691
Race (reference = white)				
Black	1.057	0.752	1.487	0.7974
Other	0.940	0.293	3.010	0.8802
BMI	0.993	0.970	1.017	0.5675
Smoking status (reference = current)				
Former	1.166	0.892	1.524	0.9653
Never	<0.001	<0.001	>999.999	0.9660
CCI	1.053	0.990	1.120	0.1015
ADI	1.003	0.995	1.010	0.5055
Surgical year, y	0.994	0.948	1.042	0.7988
EBUS or mediastinoscopy vs none	0.920	0.655	1.292	0.6300
Type of operation (reference = lobectomy)				
Pneumonectomy	0.864	0.310	2.409	0.3355
Segmentectomy	1.197	0.668	2.144	0.8173
Wedge	2.501	1.866	3.352	0.0001
Incision type (reference = thoracotomy)				
VATS	0.915	0.690	1.212	0.3935
Unknown	1.081	0.696	1.679	0.5643
Histology (reference = adenocarcinoma)				
Squamous cell carcinoma	1.096	0.830	1.447	0.3712
Other	0.915	0.594	1.408	0.5219
Grade (reference = I)				
II	1.217	0.771	1.922	0.2830
III	1.883	1.183	2.996	0.0712
IV	1.852	0.656	5.233	0.4877
Tumor size (reference = 0-10mm)				
11-20mm	1.259	0.740	2.144	0.9607
21-30mm	1.703	0.988	2.935	0.1513
31-40mm	1.848	1.026	3.329	0.0915
40+ mm	3.087	1.651	5.771	0.0002
Unknown	0.346	0.045	2.647	0.1222
Lymph node collection (reference <10)				
≥10	0.822	0.612	1.104	0.9365
Unknown	0.698	0.373	1.305	0.4097

ADI, area deprivation index; CCI, Charlson comorbidity index; EBUS, endobronchial ultrasound;

VATS, video-assisted thoracoscopic surgery

eTable 3. Multivariable Analysis of Factors Associated With Cancer Recurrence				
Variable	Hazard Ratio	95% Wald Confidence Limits		P-value
Age, y	0.992	0.987	0.997	0.0025
Female vs male, sex	0.844	0.703	1.013	0.0687
Race (reference = white)				
Black	0.985	0.900	1.078	0.7451
Other	1.193	0.910	1.563	0.2006
BMI	0.994	0.988	1.001	0.0925
Smoking status (reference = current)				
Former	0.968	0.902	1.038	0.3582
Never	0.977	0.662	1.443	0.9087
CCI	1.055	1.037	1.073	<.0001
ADI	0.999	0.997	1.001	0.2680
Surgical year, y	0.986	0.974	0.999	0.0291
Yearly hospital caseload, y	1.000	1.000	1.001	0.3970
EBUS or mediastinoscopy vs none	1.063	0.976	1.158	0.1614
Type of operation (reference = lobectomy)				
Pneumonectomy	0.832	0.620	1.117	0.2210
Segmentectomy	1.352	1.179	1.551	<.0001
Wedge	1.282	1.179	1.394	<.0001
Incision type (reference = thoracotomy)				
VATS	0.943	0.876	1.014	0.1126
Unknown	0.860	0.755	0.981	0.0243
Histology (reference = adenocarcinoma)				
Squamous cell carcinoma	0.957	0.887	1.031	0.2477
Other	1.143	1.029	1.270	0.0131
Grade (reference = I)				
II	1.210	1.085	1.349	0.0006
III	1.348	1.201	1.513	<.0001
IV	1.438	1.089	1.899	0.0105
Tumor size (reference = 0-10mm)				
11-20mm	0.911	0.806	1.029	0.1326
21-30mm	1.001	0.881	1.137	0.9922
31-40mm	1.209	1.051	1.390	0.0079
40+ mm	1.379	1.169	1.627	0.0001
Unknown	1.249	0.980	1.592	0.0722
Lymph node collection (reference <10)				
≥10	0.866	0.803	0.933	0.0002
Unknown	0.958	0.832	1.103	0.5519
30-day readmission vs none	1.125	0.996	1.270	0.0576
Pathologic stage (reference = I)				

II	1.121	0.992	1.266	0.0675
III	1.575	1.351	1.837	<.0001

ADI, area deprivation index; CCI, Charlson comorbidity index; EBUS, endobronchial ultrasound;

VATS, video-assisted thoracoscopic surgery

eTable4. Multivariable Analysis of Factors Associated With Overall Survival				
Variable	Hazard Ratio	95% Wald Confidence Limits		P-value
rTTS (reference <12 weeks)	1.132	1.064	1.204	<.0001
Age, y	1.022	1.017	1.026	<.0001
Female vs male, sex	0.721	0.599	0.868	0.0005
Race (reference = white)				
Black	0.816	0.750	0.887	<.0001
Other	0.821	0.629	1.073	0.1487
BMI	0.976	0.970	0.981	<.0001
Smoking status (reference = current)				
Former	0.821	0.772	0.873	<.0001
Never	0.554	0.373	0.823	0.0034
CCI	1.112	1.096	1.128	<.0001
ADI	1.001	0.999	1.002	0.6034
Surgical year, y	0.972	0.961	0.983	<.0001
Yearly hospital caseload, y	0.999	0.999	1.000	0.0142
EBUS or mediastinoscopy vs none	1.068	0.990	1.151	0.0874
Type of operation (reference = lobectomy)				
Pneumonectomy	1.244	1.009	1.534	0.0408
Segmentectomy	1.073	0.942	1.222	0.2879
Wedge	1.289	1.198	1.386	<.0001
Incision type (reference = thoracotomy)				
VATS	1.024	0.961	1.091	0.4691
Unknown	0.992	0.889	1.108	0.8914
Histology (reference = adenocarcinoma)				
Squamous cell carcinoma	1.143	1.072	1.219	<.0001
Other	1.147	1.045	1.260	0.0039
Grade (reference = I)				
II	1.196	1.083	1.322	0.0004
III	1.355	1.220	1.504	<.0001
IV	1.368	1.066	1.756	0.0138
Tumor size (reference = 0-10mm)				
11-20mm	1.020	0.913	1.139	0.7289
21-30mm	1.073	0.957	1.203	0.2292
31-40mm	1.254	1.107	1.421	0.0004
40+ mm	1.256	1.087	1.452	0.0020
Unknown	0.569	0.418	0.774	0.0003
Lymph node collection (reference <10)				
≥10	0.924	0.865	0.987	0.0182
Unknown	0.999	0.884	1.128	0.9855
30-day readmission vs none	1.153	1.040	1.277	0.0066

Pathologic stage (reference = I)				
II	1.389	1.252	1.541	<.0001
III	1.968	1.728	2.241	<.0001
Recurrence (reference = none)	1.391	1.313	1.474	<.0001

ADI, area deprivation index; CCI, Charlson comorbidity index; EBUS, endobronchial ultrasound;

VATS, video-assisted thoracoscopic surgery