



IASLC 2026 World
Conference on Lung Cancer

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SEOUL, REPUBLIC OF KOREA

P1.180 Oncologic Outcomes and Costs of Suboptimal Sublobar Resections vs. (Bi)Lobectomy for NSCLC in Medicare Patients

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Introduction



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Two recently completed phase III trials have shown equipoise between sublobar resections (tumors $< 2\text{cm}$ and node negative) and lobectomy.

Our aim was to assess whether oncological outcomes and therapy costs are different for patients 66 years or older with NSCLC who underwent suboptimal sublobar resections (tumors $> 2\text{cm}$ or with node involvement) as compared to (bi)lobectomy for NSCLC.

METHODS



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The Medicare SEER database was queried for the years 2015-2020, and AJCC 7th edition was used for staging.

The primary endpoints of the analysis were to compare suboptimal sublobar resections and lobectomies in terms of recurrence, overall survival (OS) and recurrence costs for stage I-III NSCLC patients.

Costs were analyzed after performing 1:1 propensity score matching (PSM) with incidence density sampling by matching patients with and without recurrence by baseline patient characteristics, histologic factors, adjuvant treatment, and number of nodes examined

METHODS - continued



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Difference in costs between suboptimal sublobar resections and lobectomies was analyzed using Wilcoxon signed-rank test for continuous variables.

Hazard ratios and respective p-values were used to analyze risks of recurrence and OS. Costs were adjusted for inflation to 2024 US dollars using the Consumer Price Index.

Patient Demographics



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Characteristic	Suboptimal Sublobar Surgeries N = 376	Standard Sublobar Resection N = 375	Lobectomies N = 5859	p-value
Age				
Mean ± SD (N)	74.1 ± 5.7 (376)	73.3 ± 5.5 (375)	73.2 ± 5.3 (5859)	0.011
Sex				
F	61.70% (232/376)	63.47% (238/375)	57.06% (3343/5859)	0.014
M	38.30% (144/376)	36.53% (137/375)	42.94% (2516/5859)	
Urban				
N	11.97% (45/376)	10.67% (40/375)	16.40% (961/5859)	0.001
Y	88.03% (331/376)	89.33% (335/375)	83.60% (4898/5859)	
Marital Status				
divorced/widowed	40.16% (151/376)	31.73% (119/375)	32.26% (1890/5859)	0.007
married	45.48% (171/376)	52.80% (198/375)	55.47% (3250/5859)	
other	4.79% (18/376)	4.80% (18/375)	3.77% (221/5859)	
single	9.57% (36/376)	10.67% (40/375)	8.50% (498/5859)	
NCI Index Score at Baseline				
Mean ± SD (N)	0.6632 ± 0.5805 (374)	0.6585 ± 0.5840 (373)	0.5589 ± 0.5455 (5768)	<.001
Visceral or Parietal Pleura Invasion				
N	82.45% (310/376)	91.47% (343/375)	86.67% (5078/5859)	0.001
Y	17.55% (66/376)	8.53% (32/375)	13.33% (781/5859)	
Tumor Grade				
Grade 1	14.10% (53/376)	27.20% (102/375)	17.73% (1039/5859)	<.001
Grade 2	48.14% (181/376)	46.93% (176/375)	48.52% (2843/5859)	
Grade 3	36.97% (139/376)	23.47% (88/375)	32.43% (1900/5859)	
Grade 4	0.80% (3/376)	2.40% (9/375)	1.31% (77/5859)	
Tumor Size				
Mean ± SD (N)	3.5 ± 5.2 (376)	1.4 ± 0.4 (375)	3.4 ± 4.9 (5859)	<.001
Histology				
Adenocarcinoma	52.66% (198/376)	55.47% (208/375)	56.17% (3291/5859)	0.005
Other	16.22% (61/376)	22.67% (85/375)	16.52% (968/5859)	
Squamous Cell	31.12% (117/376)	21.87% (82/375)	27.31% (1600/5859)	
Chemotherapy/Targeted Therapy				
No	72.07% (271/376)	88.80% (333/375)	70.51% (4131/5859)	<.001
Yes	27.93% (105/376)	11.20% (42/375)	29.49% (1728/5859)	
Radiation				
No	89.63% (337/376)	98.40% (369/375)	94.79% (5554/5859)	<.001
Yes	10.37% (39/376)	1.60% (6/375)	5.21% (305/5859)	
Number of Resected Nodes				
Mean ± SD (N)	8.1 ± 8.2 (376)	6.5 ± 6.5 (375)	12.0 ± 9.0 (5859)	<.001
At least 10 nodes resected				
No	69.68% (262/376)	76.53% (287/375)	47.74% (2797/5859)	<.001
Yes	30.32% (114/376)	23.47% (88/375)	52.26% (3062/5859)	
Number of Positive Nodes				
Mean ± SD (N)	0.4 ± 1.2 (376)	0.0 ± 0.0 (375)	0.6 ± 1.8 (5859)	<.001
Lymph Node Involvement (at least 1 positive node)				
No	81.91% (308/376)	100.0% (375/375)	80.44% (4713/5859)	<.001
Yes	18.09% (68/376)	0.00% (0/375)	19.56% (1146/5859)	
Duration from Diagnosis to Surgery (Days)				
Mean ± SD (N)	50.1 ± 35.0 (376)	41.2 ± 31.7 (375)	53.6 ± 35.1 (5859)	<.001
Total survival time (Days)				
Mean ± SD (N)	1507.6 ± 868.5 (376)	1576.8 ± 739.4 (375)	1666.4 ± 916.6 (5859)	0.001

RESULTS



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- ❑ A total of 6,610 patients, of whom 2,941 encountered recurrence (44.5%), were analyzed over a median follow-up time of 4.3 years (IQR: 2.8 - 6.2).
- ❑ The number of suboptimal sublobar resections was 376 out of 751 sublobar resections (50.1%) and the number of (bi)lobectomies was 5,859.
- ❑ Recurrence rates at 2, 3 and 5 years were 30.5%, 36.1% and 44.5% for (bi)lobectomies and 38.2%, 46.5% and 57.8% for suboptimal sublobar surgeries, univariate (HR: 0.71, $p < 0.001$) and multivariate (HR: 0.78, $p < 0.001$), in favor of (bi)lobectomy
- ❑ Other risk factors associated with higher recurrence rates were male gender, NCI co-morbidity index score, visceral/parietal pleura invasion, number of examined nodes/positive nodes, stage, adenocarcinoma histology, and tumor grade (all $p < 0.05$ in multivariate model).

RESULTS- continued



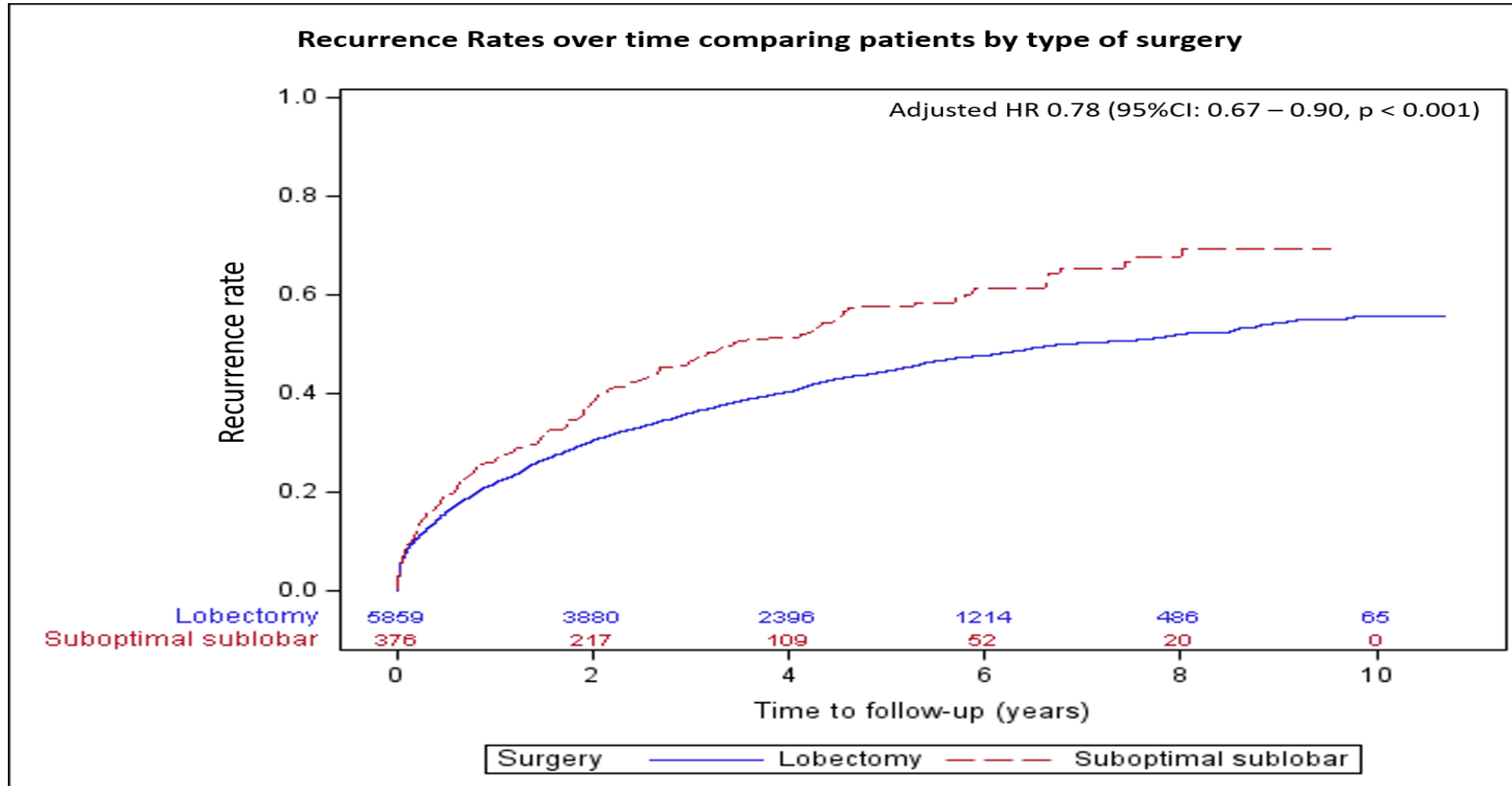
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- ❑ OS for (bi)lobectomies at 2, 3 and 5 years was 84.2%, 77.4% and 63.9%, while OS for suboptimal sublobar surgeries were 81.6%, 68.8% and 60.0%, univariate and multivariate analyses, hazard ratios 0.78 ($p = 0.001$) and 0.88 ($p = 0.109$) in favor of (bi)lobectomy
- ❑ In the matched population, the median overall costs associated with recurrence in both groups were \$3,650 overall per-patient-per-month (PPPM) for suboptimal sublobectomies and \$4,252 PPPM for (bi)lobectomies. No significant differences were observed between surgery groups for overall, inpatient, outpatient, pharmacy and other costs (all $p > 0.05$).
- ❑ Although Disease-free survival and recurrence rate outcomes were significantly better with (bi)lobectomy than suboptimal sublobar resection, there was no significant difference in overall survival between the initial surgical interventions because there was a significantly higher usage of local modalities (surgery and/or radiation) and lower rate of best supportive care at recurrence, implying a higher rate of salvageable situations with suboptimal sublobar resection than (bi)lobectomy.

Recurrence Rates vs Time by Initial Surgical Procedure



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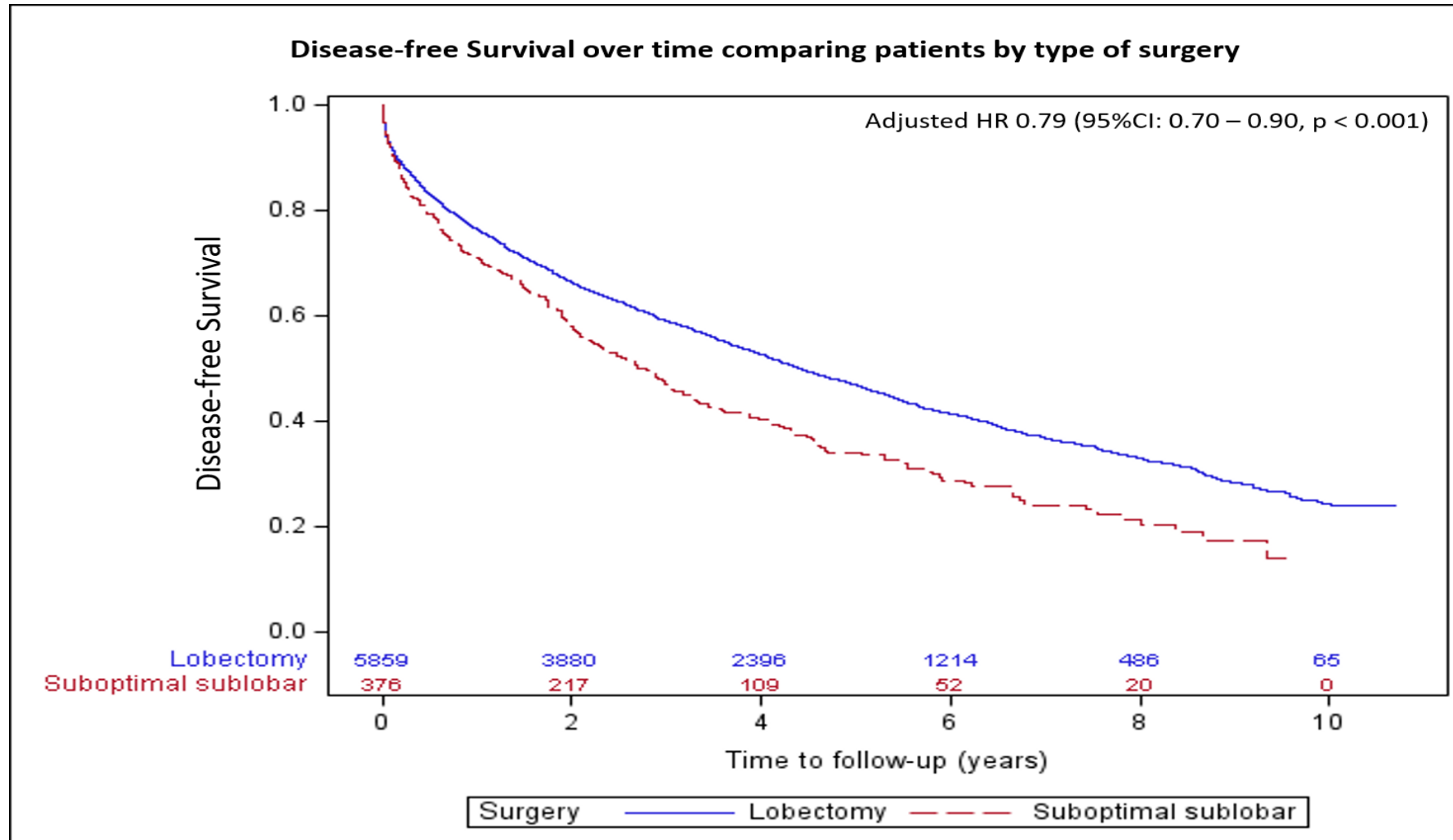


Disease-free Survival vs Time by Initial Surgical Procedure



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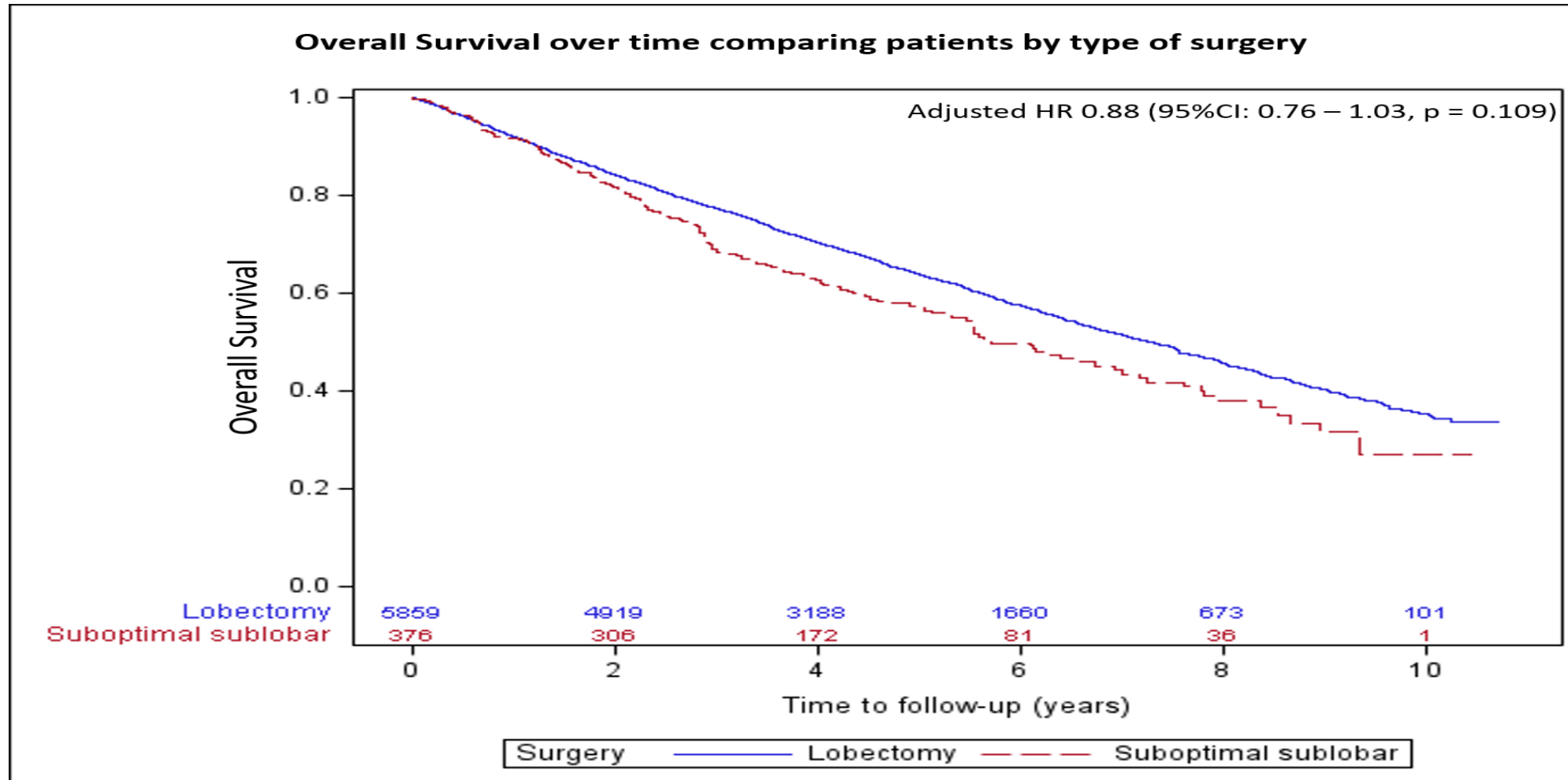


Overall Survival vs Time by Initial Surgical Procedure



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Treatment of recurrences by initial surgical procedure



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Treatment for recurrence	Suboptimal sublobar surgeries N =147	Lobectomy surgeries N =2587	p-value
Best supportive care	12.24% (18/147)	16.93% (438/2587)	<.001
Chemo + Immunotherapy	19.73% (29/147)	16.51% (427/2587)	
Chemotherapy only	16.33% (24/147)	21.53% (557/2587)	
Immunotherapy only	6.12% (9/147)	8.93% (231/2587)	
Radiation only	23.13% (34/147)	26.44% (684/2587)	
Surgery and radiation	1.36% (2/147)	1.97% (51/2587)	
Surgery only	15.65% (23/147)	5.33% (138/2587)	
Surgery, radiation and chemo/immuno	5.44% (8/147)	2.36% (61/2587)	

Costs per patient per month by initial surgical procedure by recurrence or not



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Costs- per patient per month	Patients without recurrence			Recurrence cohort		
	Suboptimal sublobar surgery matched cohort N =164	Lobectomy surgery matched cohort N =2512	p-value	Suboptimal sublobar surgery recurrence cohort N =192	Lobectomy surgery recurrence cohort N =2477	p-value
Total all-cause (Mean ± SD (N))	2468.5 ± 7430.2 (164)	2368.4 ± 5765.6 (2512)	0.620	8290.6 ± 11984.7 (192)	8313.9 ± 13530.3 (2477)	0.875
Inpatient (Mean ± SD (N))	1346.5 ± 6987.7 (164)	955.1 ± 4823.1 (2511)	0.455	3785.1 ± 9494.9 (192)	3718.4 ± 10917.5 (2477)	0.879
Outpatient (Mean ± SD (N))	283.6 ± 489.4 (164)	370.5 ± 1057.6 (2512)	0.934	1368.5 ± 3026.5 (192)	1380.5 ± 2693.6 (2477)	0.733
Pharmacy (Mean ± SD (N))	260.8 ± 433.7 (164)	405.5 ± 1167.9 (2512)	0.187	662.0 ± 2890.3 (192)	727.3 ± 2098.8 (2475)	0.719
Other (Mean ± SD (N))	577.7 ± 908.3 (164)	637.6 ± 1237.5 (2512)	0.863	2474.9 ± 3553.5 (192)	2488.4 ± 3532.1 (2477)	0.720



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Actionable Take Away Message

Approximately 50% of sublobar resections are suboptimal.

For tumors associated with nodal involvement or size greater than 2cm, (bi)lobectomies should remain the standard of care because recurrence rates were significantly lower than for sublobar resections.

OS was not significantly different between these 2 surgical techniques, but trended in favor of (bi)lobectomies.

There was no difference in recurrence costs for suboptimal sublobar resections vs (bi)lobectomy.

Future Direction for Research



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Prior to consideration of sub-lobar resection, better staging is needed to rule out nodal involvement

For patients with tumors $> 2\text{cm}$, lobectomy should be performed or if the patient has marginal lung function, stereotactic radiotherapy should be considered.