Surgery Confers a Survival Advantage in Limited-Stage Small Cell Lung Cancer: A National Analysis

Objective
Given the systemic nature and often late presentation of the disease, the role of surgical resection in the multimodal management of Small Cell Lung Cancer (SCLC) remains controversial. Using a nationally-representative cohort, this study evaluated the impact of surgical resection on overall survival among limited-stage SCLC patients.

Methods
All limited-stage I-IIA SCLC patients ?18 years considered eligible for surgical resection according to AJCC guidelines were identified using the 2004-2017 National Cancer Database. Surgery was defined to comprise lobectomy, pneumonectomy, or lung resection. Patients receiving surgical resection constituted the Surgery cohort (others: No Surgery). Cuzick's nonparametric test was used to assess temporal trends in resection rates. Cox proportional hazard modeling was used to evaluate time-adjusted survival, while Kaplan-Meier survival curves were constructed to evaluate unadjusted five-year survival. Nearest-neighbor propensity matching was used to generate a balanced cohort for a risk-adjusted sensitivity analysis.

Results
Of 16,842 stage I-IIA patients, 2,598 (15.4%) underwent surgical resection. The proportion of patients treated with surgical resection increased over the study time-period (2.89 to 11.16%, nptrend< 0.001).

The Surgery cohort was younger (68 vs 70years) and more frequently diagnosed with Stage IA disease (65.6 vs 39.3%, p< 0.001), but presented with a similar mean Charlson comorbidity score (0.66 vs 0.67, p=0.53), relative to No Surgery. Following risk adjustment, surgery was associated with a 44% decrease in relative risk of mortality (AOR 0.56, 95%CI 0.51-0.61). In a subset analysis evaluating impact of resection on outcomes within each stage, similar results were seen. Further, surgical resection was linked to a +16.37 month increase in survival time (95%CI 15.00-17.74). In a propensity-matched sensitivity analysis, surgery remained associated with decreased odds of mortality (AOR 0.47, 95%CI 0.35-0.64).

Conclusion
Using a national cohort, this study demonstrates that surgical resection significantly benefits patient outcomes and should be offered as a mainstay in early SCLC disease management. Although the proportion of patients treated with surgery increased over the study time course, surgical resection remains a distinctly underused approach. Considering the current dismal median survival of these patients, studies evaluating optimal timing of surgery are warranted.

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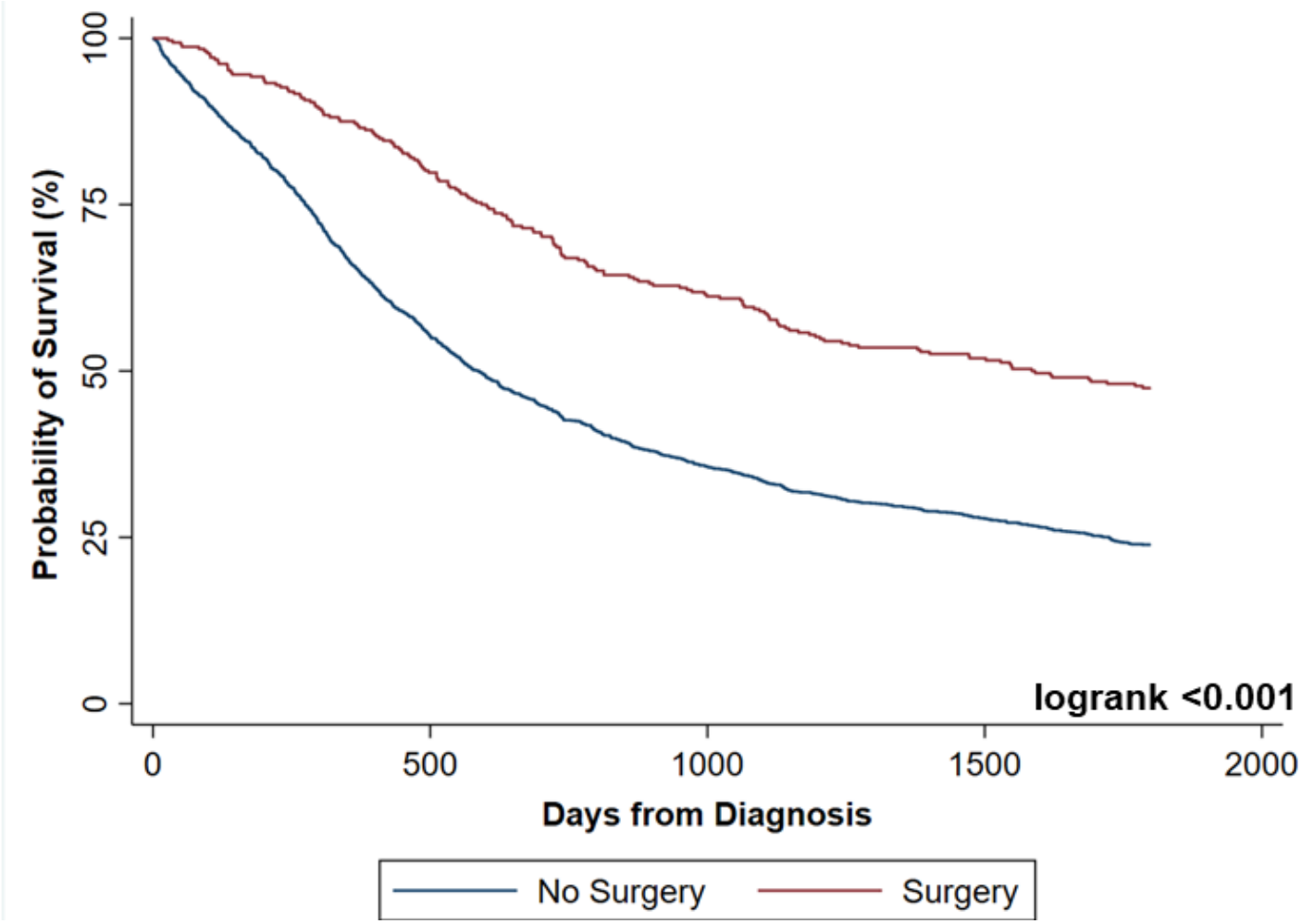
Probability of Survival (%)
0
25
50
75
100
0
500
1000
1500
2000
Days from Diagnosis
logrank <0.001
No Surgery
Surgery