

Introduction

The FDA approval of neoadjuvant chemoimmunotherapy (chemoIO) in 2022 changed the treatment landscape for resectable non-small cell lung cancer (NSCLC). However, chemoIO may increase operative complexity, and whether minimally invasive surgery (MIS) lobectomy provides outcomes comparable to open resection in this setting remains uncertain.

Methods

Population

- **NCDB 2017 – 2022**
- Resectable NSCLC (cIB-IIIB)
- Received lobectomy after neoadjuvant chemoIO
 - ChemoIO defined as chemo and IO initiated within 30d of each other

Retrospective cohort study

- Exposure = approach: open versus MIS (RATS/VATS)

Analysis

- Kaplan-Meier method for overall survival (OS)
- Univariable & multivariable Cox proportional hazards models
 - Complete-case analysis

Table 3. Predictors of mortality

Variable	n	Univariable		Multivariable	
		HR	95% CI	HR	95% CI
Surgical approach					
Open	237	Ref.		Ref.	
MIS	489	1.33	(0.86-2.05)	1.30	(0.82-2.05)
Age at diagnosis, y					
Per 1-year increase	726	1.04	(1.01-1.07)	1.04	(1.01-1.07)
Clinical stage					
I	31	Ref.		Ref.	
II	252	1.35	(0.41-4.41)	1.40	(0.41-4.73)
III	443	1.41	(0.44-4.51)	2.02	(0.60-6.80)
Diagnosis year					
2017-2018	40	Ref.		Ref.	
2019-2020	96	0.68	(0.33-1.40)	0.68	(0.32-1.44)
2021-2022	590	0.85	(0.43-1.68)	0.79	(0.39-1.58)
Histology					
Adenocarcinoma	413	Ref.		Ref.	
Squamous Cell	313	1.56	(1.05-2.34)	1.49	(0.97-2.29)
Race/ethnicity					
White	587	Ref.		Ref.	
Black	76	0.69	(0.32-1.49)	0.72	(0.32-1.62)
Other	63	0.40	(0.15-1.10)	0.44	(0.15-1.23)
Insurance					
Private insurance	240	Ref.		Ref.	
Medicaid	67	1.26	(0.57-2.78)	1.45	(0.63-3.30)
Medicare	401	1.50	(0.95-2.36)	0.98	(0.57-1.67)
Insurance Status Unknown	18	1.09	(0.26-4.57)	0.95	(0.22-4.15)
Charlson-Deyo comorbidity index					
0	415	Ref.		Ref.	
1	200	1.15	(0.73-1.81)	0.95	(0.59-1.53)
2+	111	1.01	(0.56-1.82)	0.86	(0.47-1.57)
Nodal stage migration					
No change	366	Ref.		Ref.	
Upstaged	47	2.04	(1.09-3.82)	2.07	(1.08-3.95)
Downstaged	313	0.68	(0.44-1.05)	0.53	(0.33-0.86)

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Results

Figure 1. OS by Surgical Approach

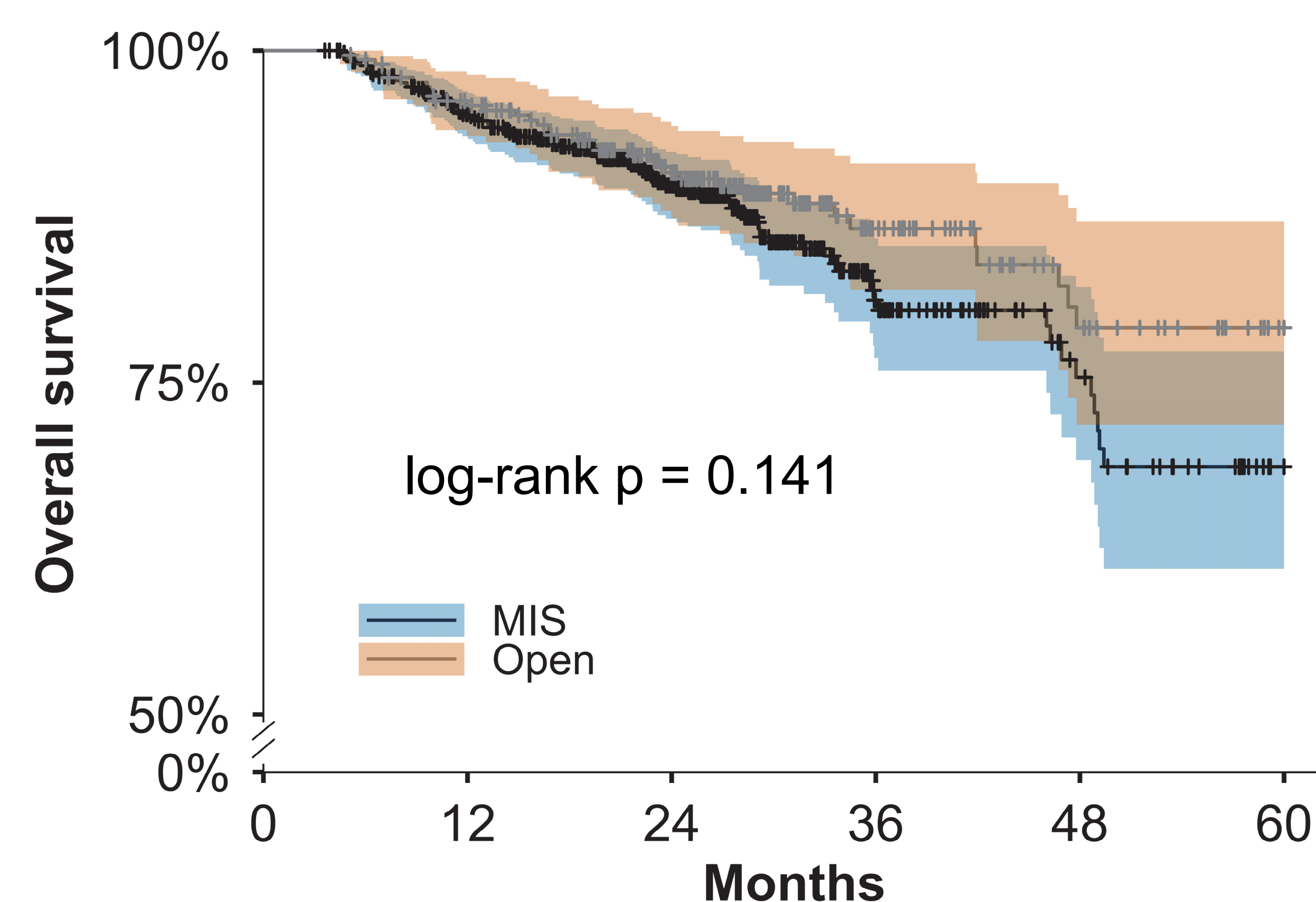


Table 1. Key baseline characteristics

	MIS (n=626)	Open (n=293)	p
T size, mm (IQR)	44 (28-59)	49 (35-65)	0.003
Dx 2021-2022	531 (84.8)	220 (75.1)	<0.001
F/U, mo (IQR)	26.4 (20.0-32.9)	28.9 (22.5-37.7)	<0.001

- MIS lobectomy **conversion rate: 8.9%**

Table 2. Perioperative and pathologic outcomes

	LOS	30d readm	30d mort	90d mort	R0	↑ N stage	↓ N stage
MIS	4.0 (2.0–6.0)	4.2%	1.3%	2.2%	95.5%	6.9%	42.7%
Open	4.0 (3.0–6.0)	2.0%	1.0%	2.0%	94.9%	6.1%	40.3%
p value	<0.001	0.11	1.00	0.84	0.37	0.62	0.34

Conclusions

After neoadjuvant chemoIO, MIS lobectomy compared with open was associated with:

- low conversion to open resection
- slightly LOS (but median)
- short-term postop outcomes
- R0 & N stage migration rates
- **overall survival**

OS was numerically but not significantly lower—with notably immature survival data.

MIS lobectomy appears to be feasible and reasonably safe after neoadjuvant chemoIO.

Future Directions

- Exploration of factors associated with MIS selection & conversion to open resection
- **High-volume institutions should publish their procedural and oncologic outcomes as their follow-up accrues.**

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