



# **Surgery in Early stage NSCLC**

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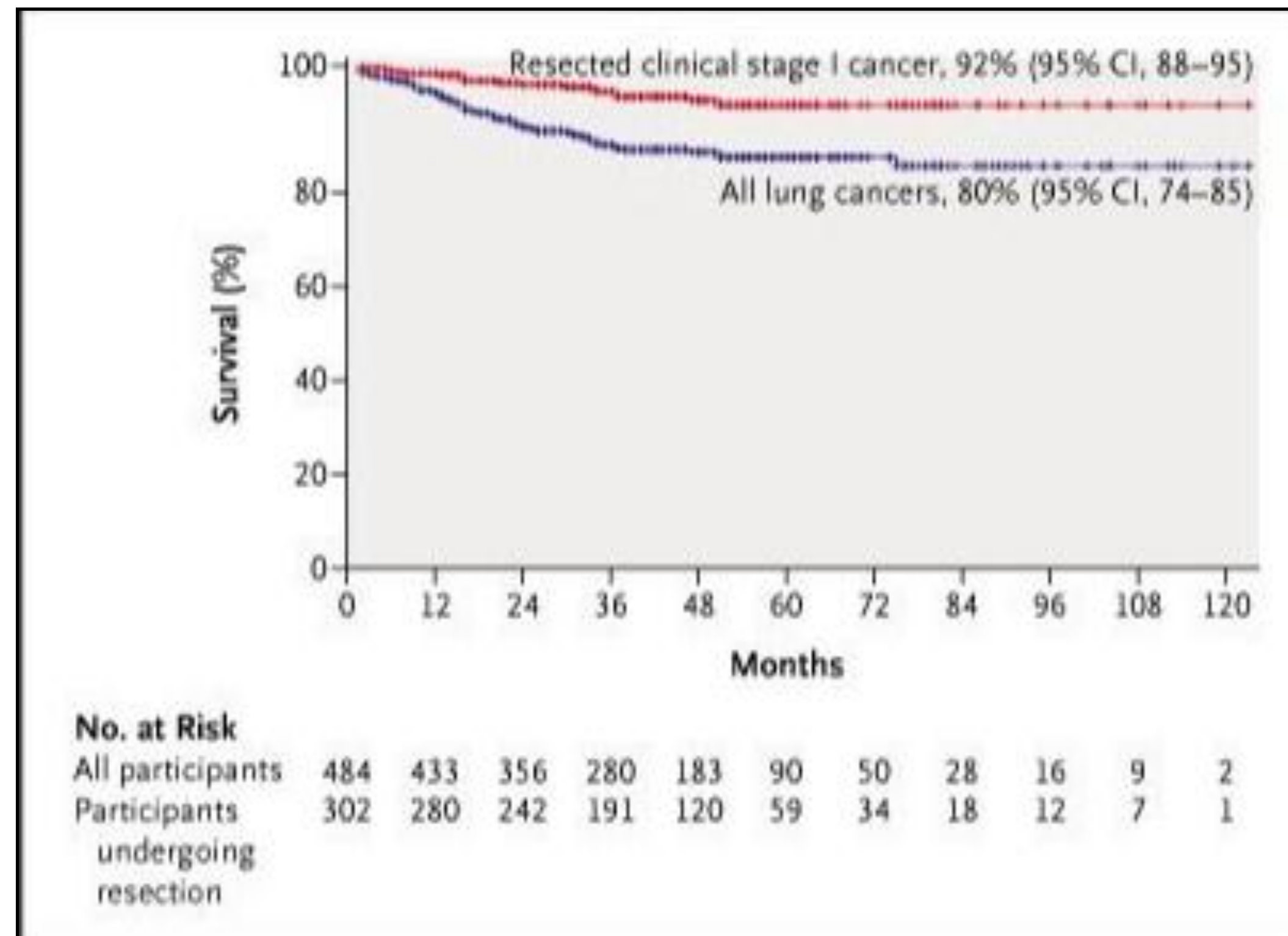
# Points for discussion

- Why surgery
- Approach- MIS versus thoracotomy
- Lobectomy versus segmentectomy
- Systemic nodal dissection versus sampling
- Postoperative outcome
- Role of adding systemic therapy to surgery

# Why surgery in early stage

- Early stage
  - stage I and II and select IIIA
  - T1-3/N0-1

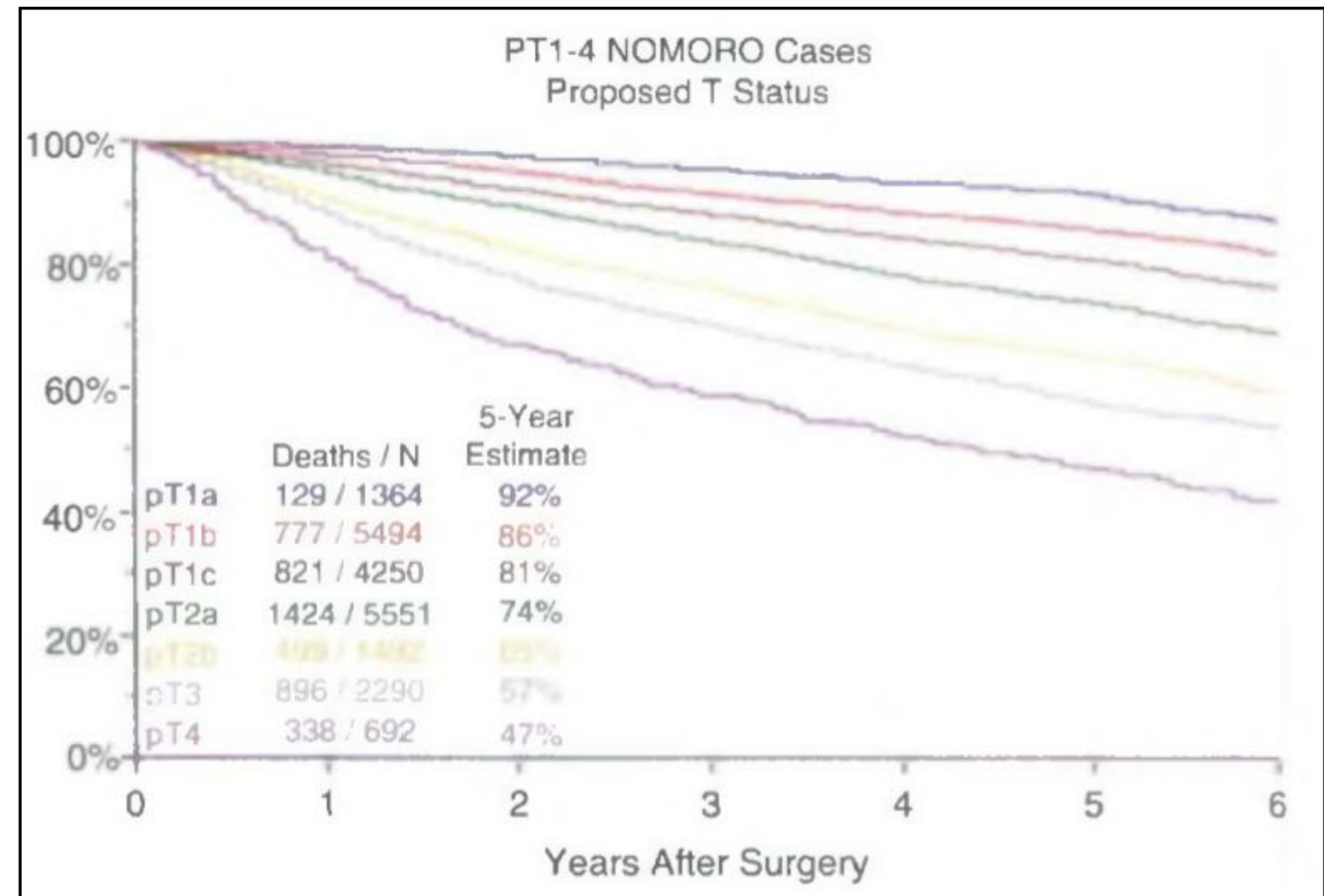
- **Outcome of surgery**
- I- ELCAP, NEJM, 2006
  - 10 yr OS- 92%



# Outcome

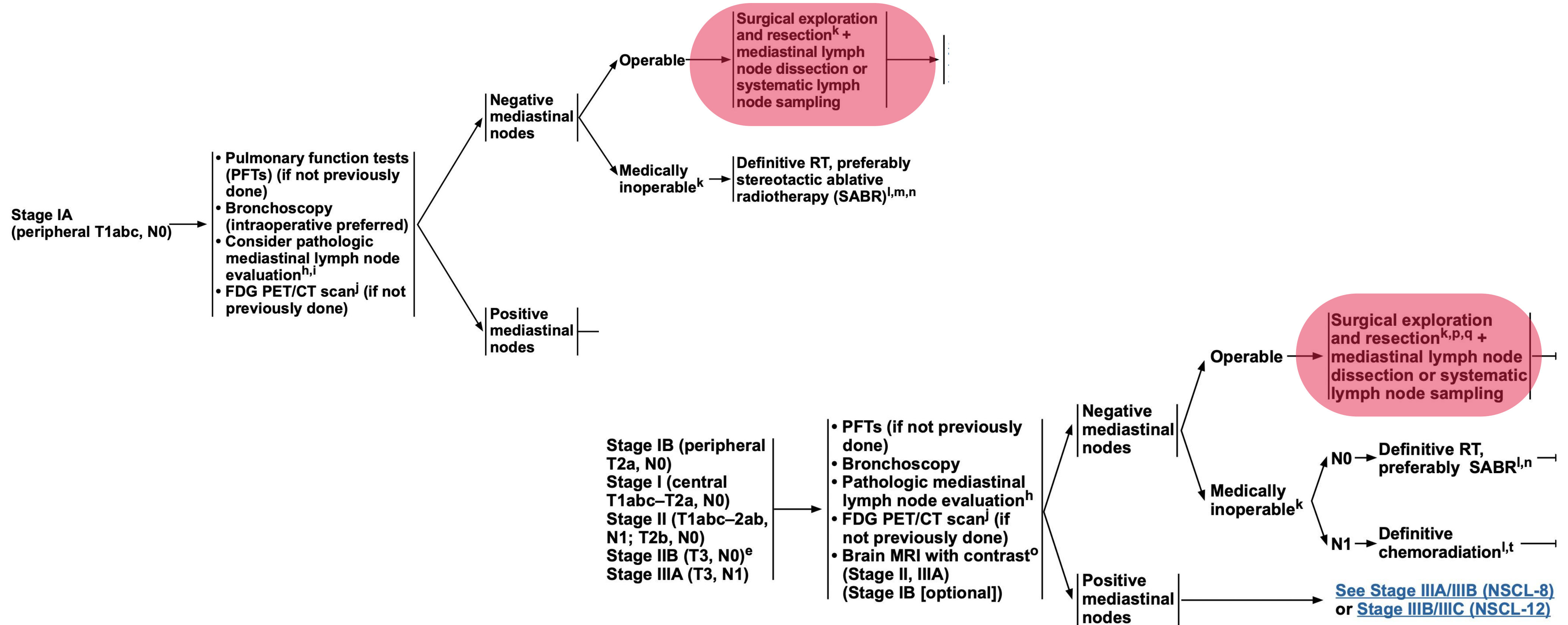
- AJCC 8th edition- 35 databases from 16 different countries

**Early stage lung cancer-  
Surgery has excellent outcome.**



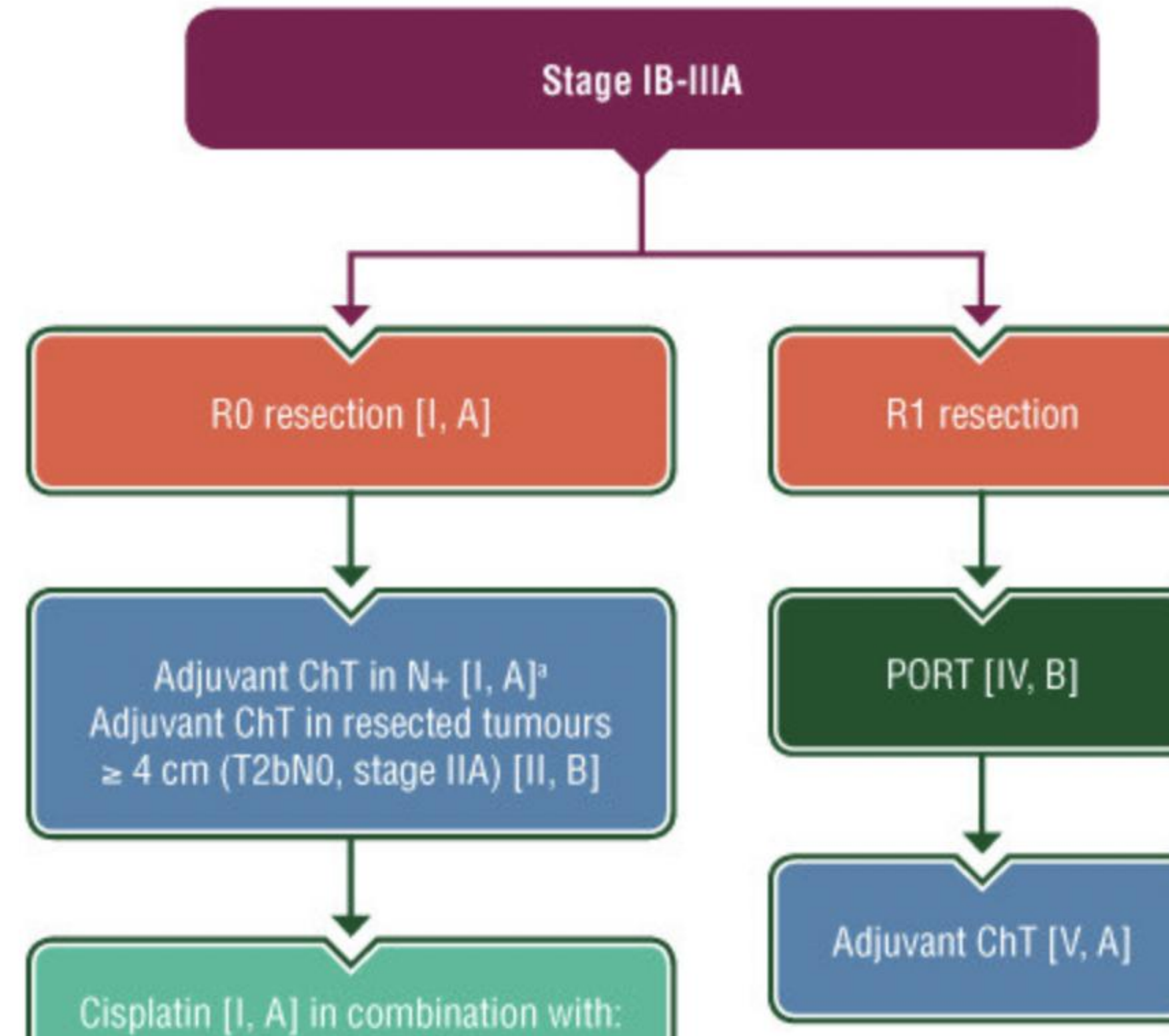
# Recommendation

## NCCN



# Recommendation

ESMO

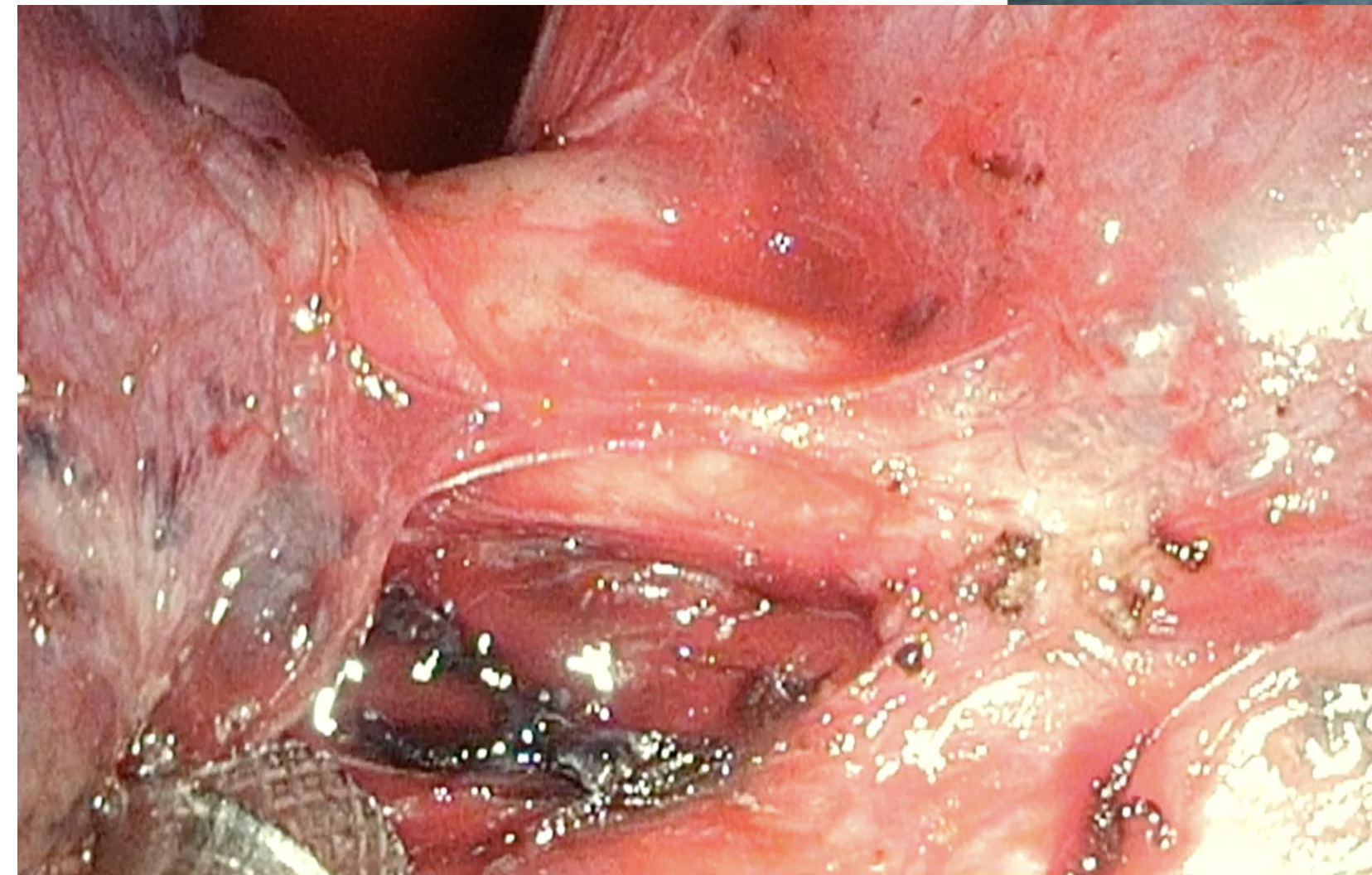
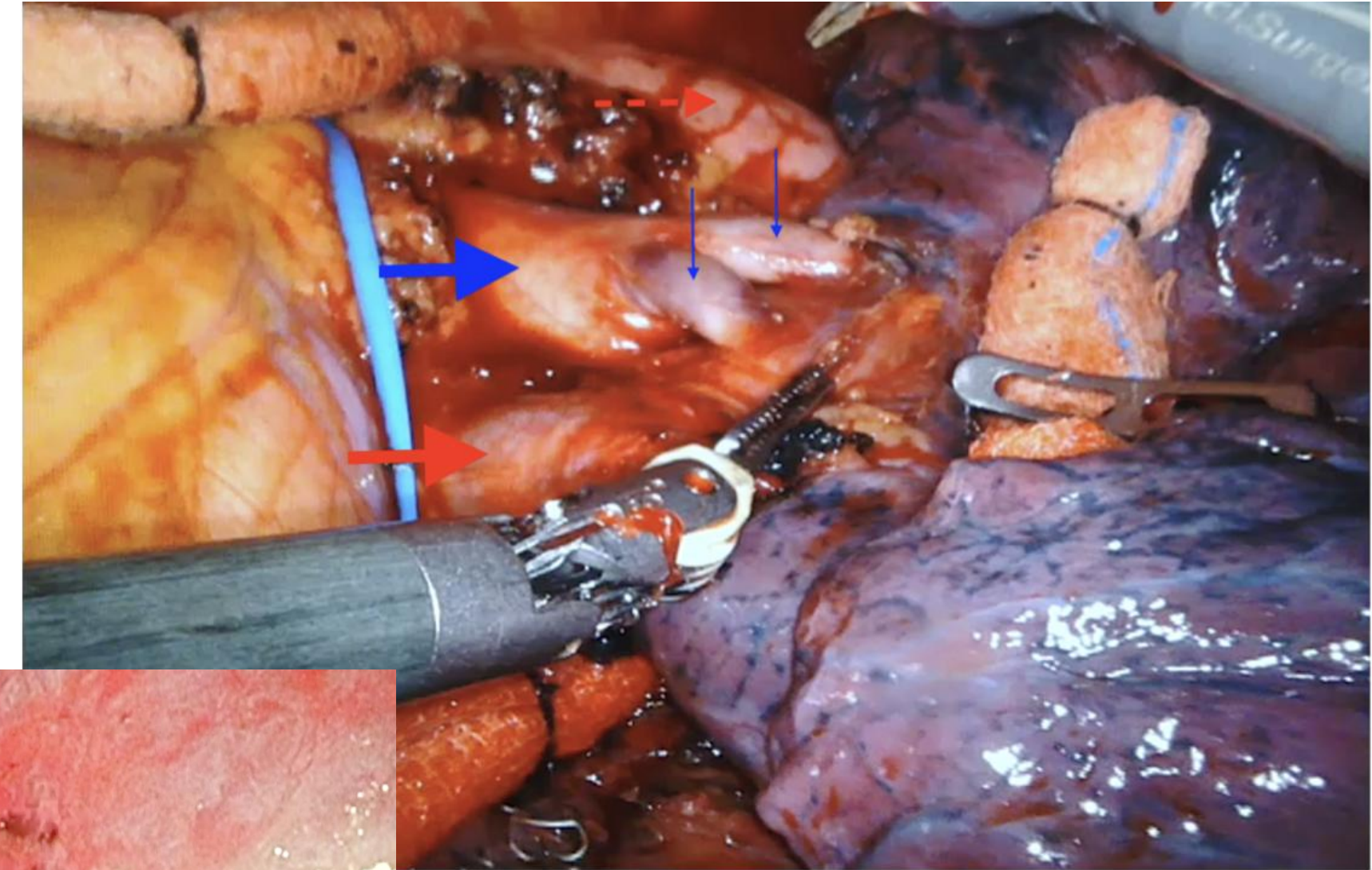


# Which type- VATS versus Open



# Purported Benefits

- Less pain, faster recovery
- Less complications
- Better quality of life
- Overall reduced cost
- **Oncological equivalence**





# VATS v/s Open: Meta-analyses

	N	Mortality	Morbidity	Oncological outcomes
<b>C Cao, 2013</b>	3634	=	✓	
<b>Cai Y-x, 2013, China</b>			✓	✓
<b>Zhang Z, 2013, China</b>	5389			✓
<b>Wang Z, 2019</b>	1514		✓	=

# Randomised Evidence

## Bendixen et al. 2016

N = 206, single centre

- Decreased procedure time, blood loss
- Less epidural analgesia duration
- Cost effective
- Similar complications

- Poor capture of QoL data
- No oncological outcomes reported

## Long et al. 2018

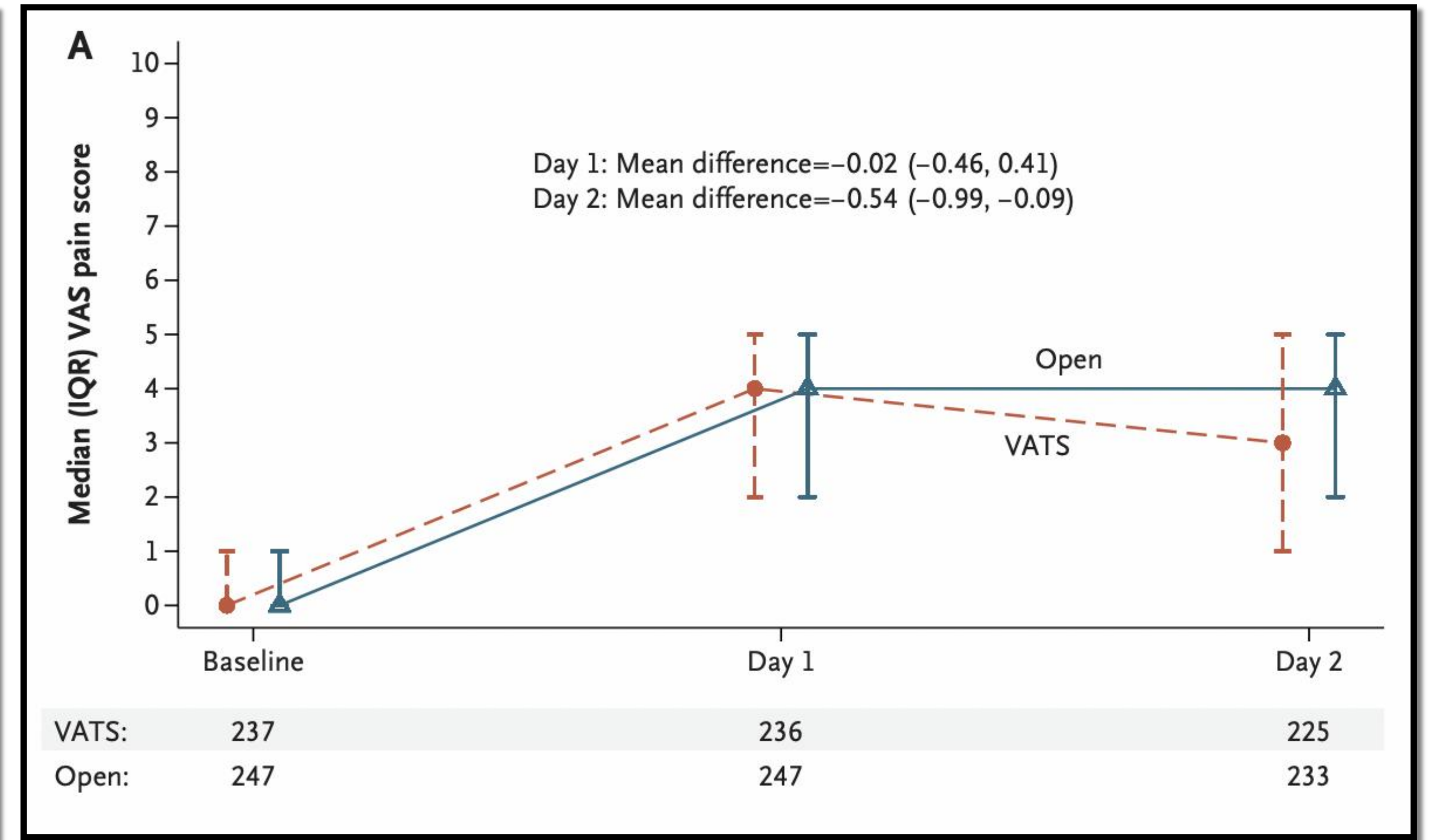
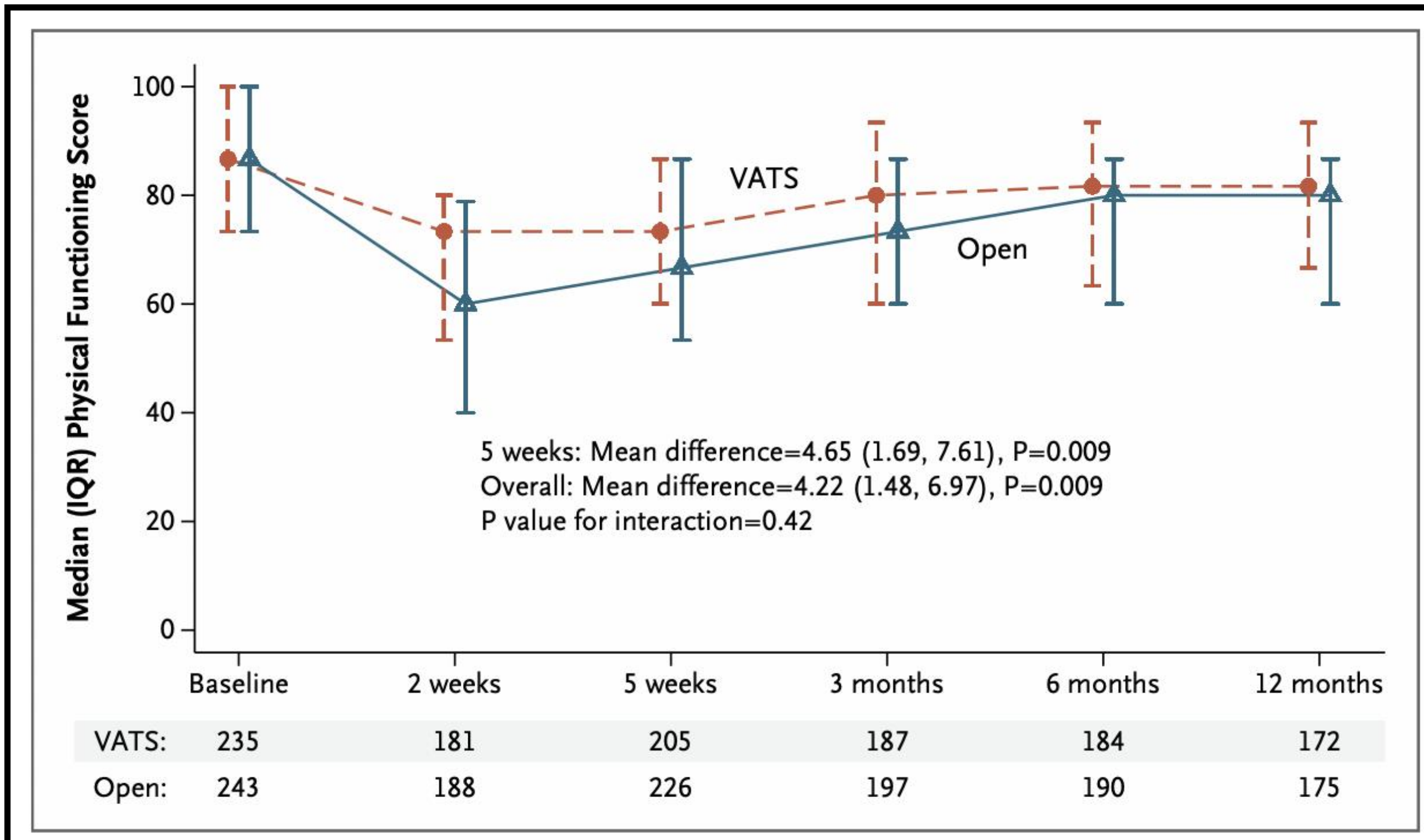
N = 425, multi centre

- Decreased procedure time, blood loss
- Equivalent nodal yield, R0 rates
- Similar complications

- No comment on post - op pain
- Survival results awaited

# VIOLET- NEJM Jan 2022

## Results



# Global Trends

## STS Lung Cancer Resection Risk Model: Higher Quality Data and Superior Outcomes

[Felix G. Fernandez](#), MD MSc,<sup>1</sup> [Andrzej S. Kosinski](#), PhD,<sup>2</sup> [William Burfeind](#), MD,<sup>3</sup> [Bernard Park](#), MD,<sup>4</sup>  
[Malcolm M. DeCamp](#), MD,<sup>5</sup> [Christopher Seder](#), MD,<sup>6</sup> [Blair Marshall](#), MD,<sup>7</sup> [Mitchell J. Magee](#), MD,<sup>8</sup> [Cameron D. Wright](#),  
MD,<sup>9</sup> and [Benjamin D Kozower](#), MD MPH<sup>10</sup>

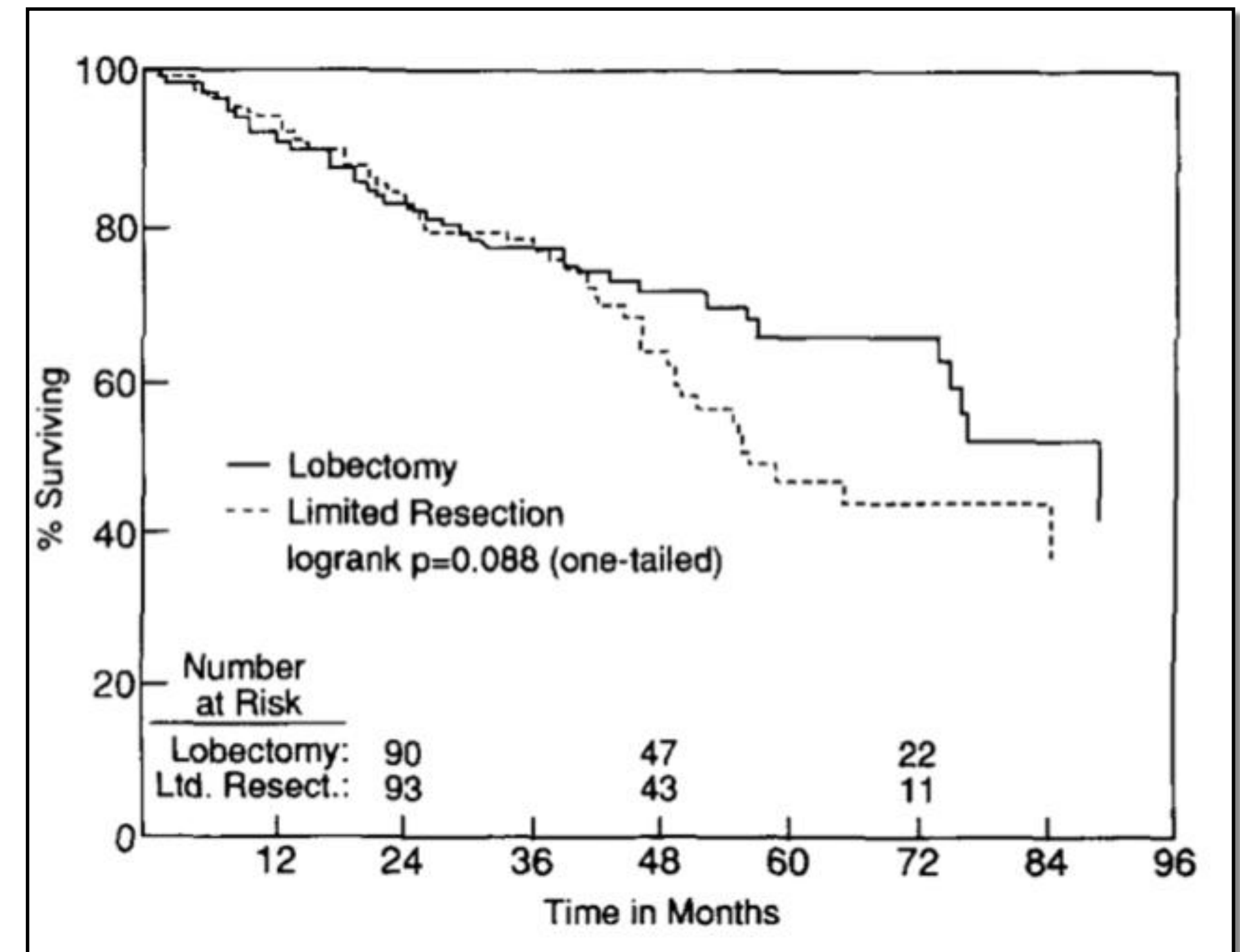
- January 2012 to December 2014
- **27,844** resections for lung cancer
- *62% VATS resections*
- Significantly lower morbidity and mortality in MIS group

**VATS preferred..**

# What is adequate for local tumour

## Lobectomy versus Segmentectomy

- Lobectomy- standard of treatment
- Randomised trial - **Ginsberg et. Al. , 1995, LCSG**
- T1N0, 276 patients
- Patients undergoing limited resections had
  - 75% increased recurrence
  - Local recurrence tripled
  - 30% increased overall deaths
  - 50% increased cancer deaths



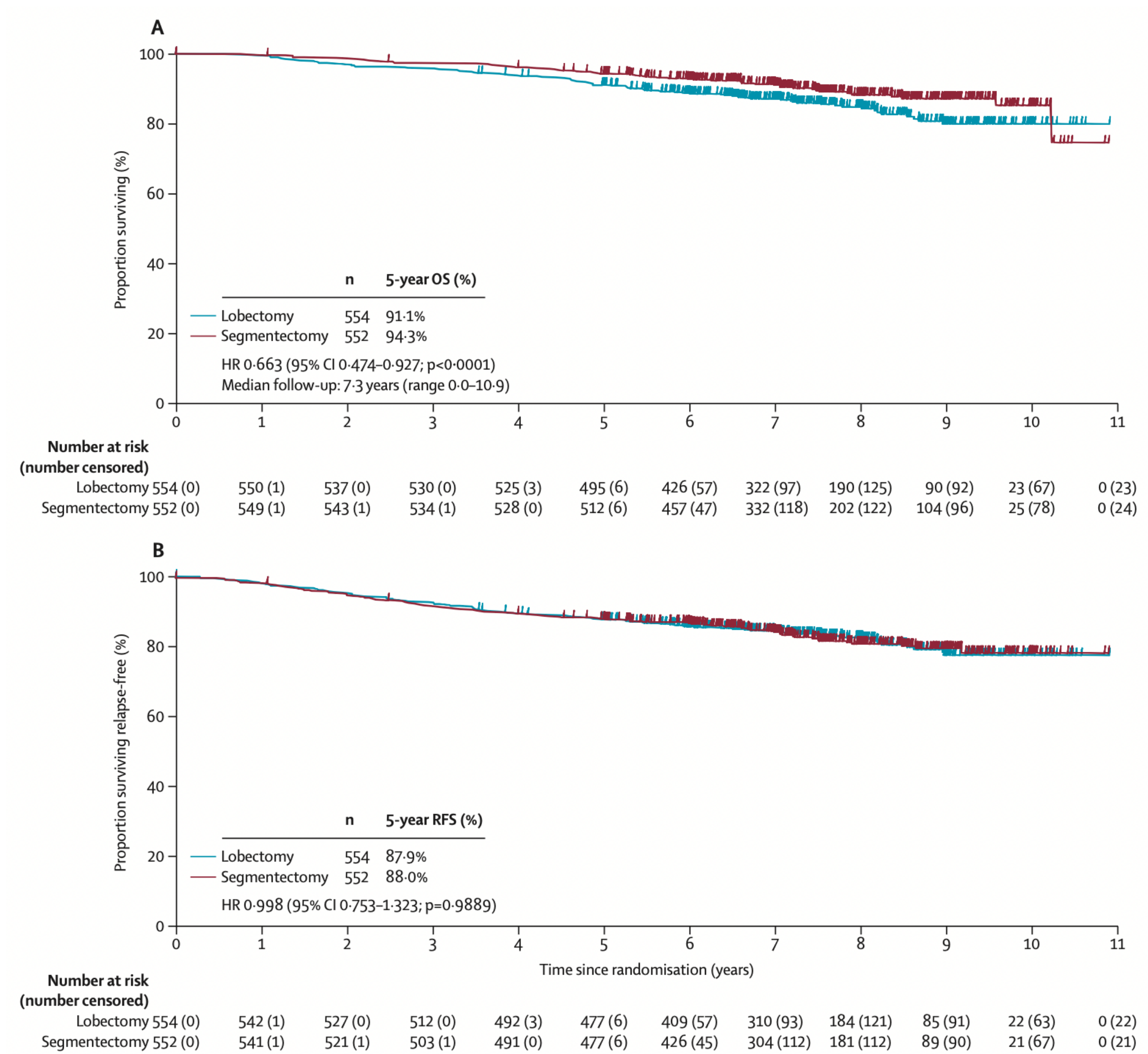
# Lobectomy versus sublobar resection

**RCT by Nasser K Altorki, Lancet 2018**

- 697 patients randomised
- Grade 3/4/5 AEs- slightly more frequent with segmentectomy (18.6%), compared to lobectomy (15.6%) and wedge resections (11%)- but no statistical significant difference
- More of air leak in segmentectomy group

# Lobectomy versus Segmentectomy

## JCOG 0802, Lancet, April 2022



- Improved survival in segmentectomy group
- At 1 year follow up- PFT improvement of 3.5%, statistically significant but less than expected (10%)
- Local recurrence double in segmentectomy group (11% versus 5%)

# Lobectomy versus Segmentectomy

- Evidence is so far only for tumours  $\leq 2$ cm, N0
- All segmentectomies are not the same- technically challenging
- More air leak

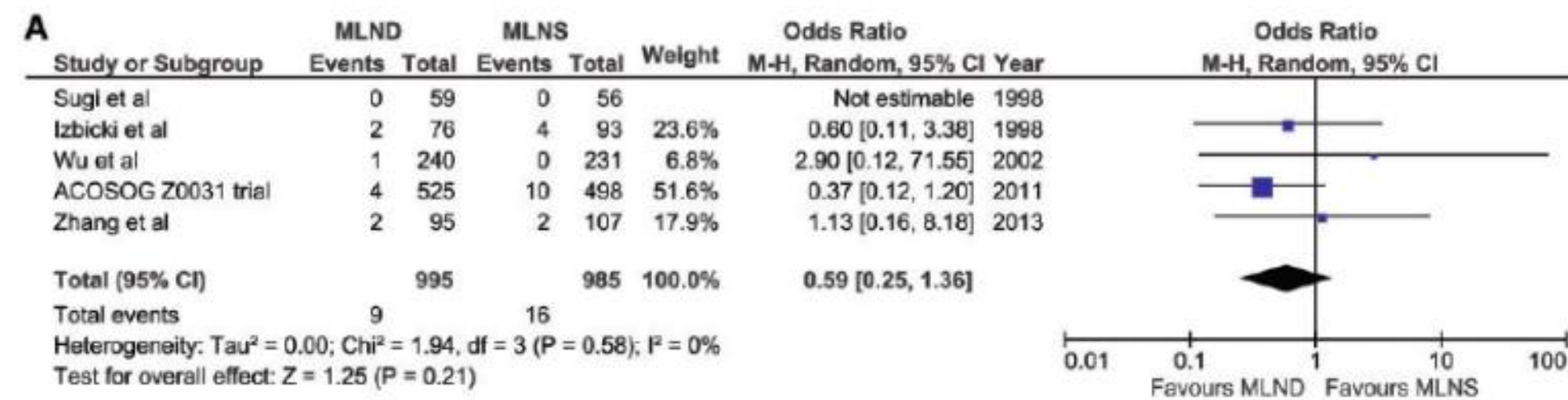
**Still Lobectomy is standard..**



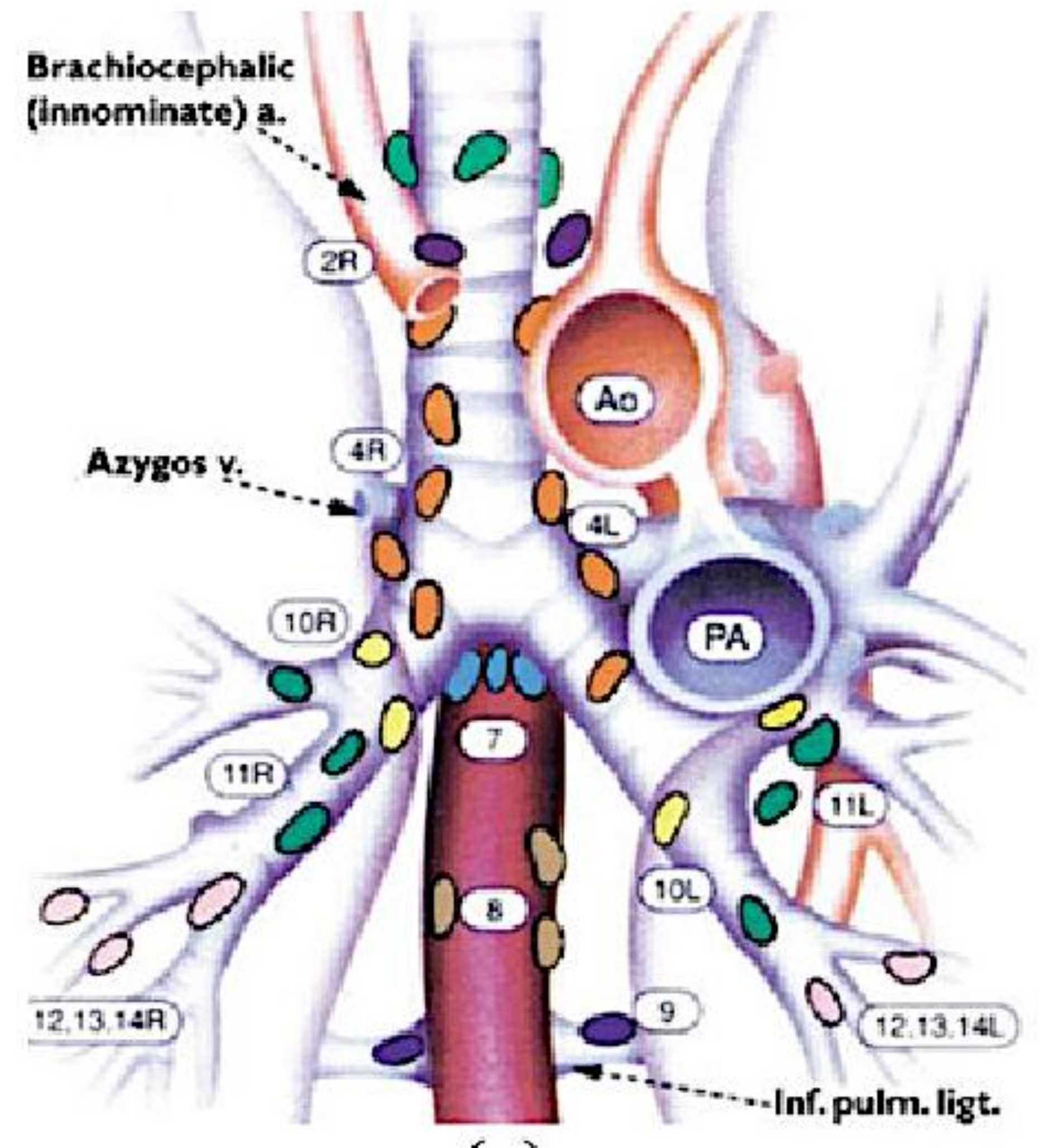
# What is adequate for nodal burden

## SMLND versus SMLNS

Systematic lymphadenectomy versus sampling of ipsilateral mediastinal lymph-nodes during lobectomy for non-small-cell lung cancer: a systematic review of randomized trials and a meta-analysis



Mokhles et.al. EJCTS, 2017  
 SMLND- no increase in operative mortality  
 Better clearance and prognostication



# Postoperative outcome- mortality and morbidity

- ACOSOG Z0030, 2011
- More than 1000 patients-  
**open lobectomy (93%)** with  
SMLND/SMLNS
- Mortality- 1.37%
- Morbidity- 38%
- JCOG0802, 2022
- More than 1000 patients,  
**VATS (90%)**  
lobectomy/segmentectomy
- Mortality 0%
- Morbidity- 26%

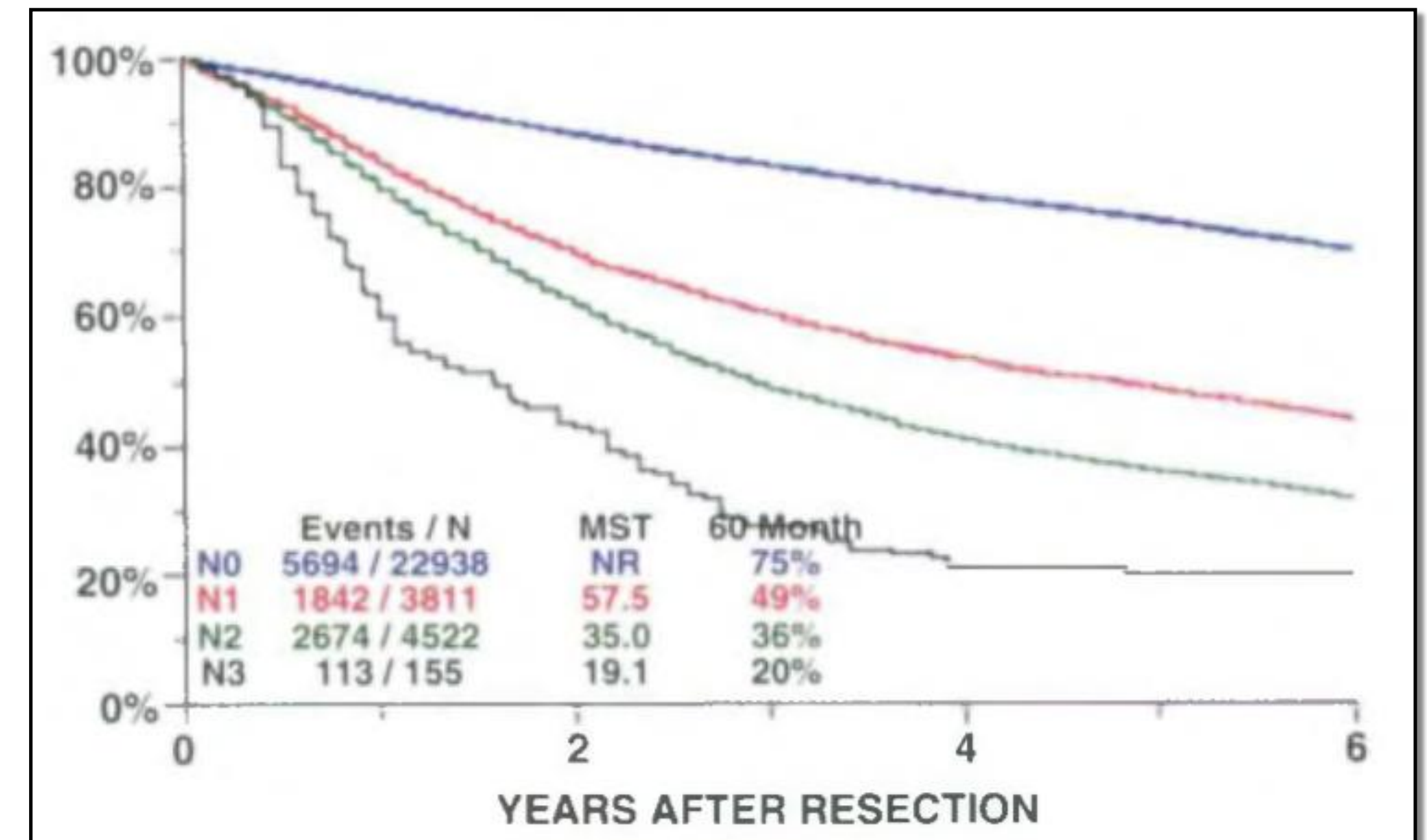
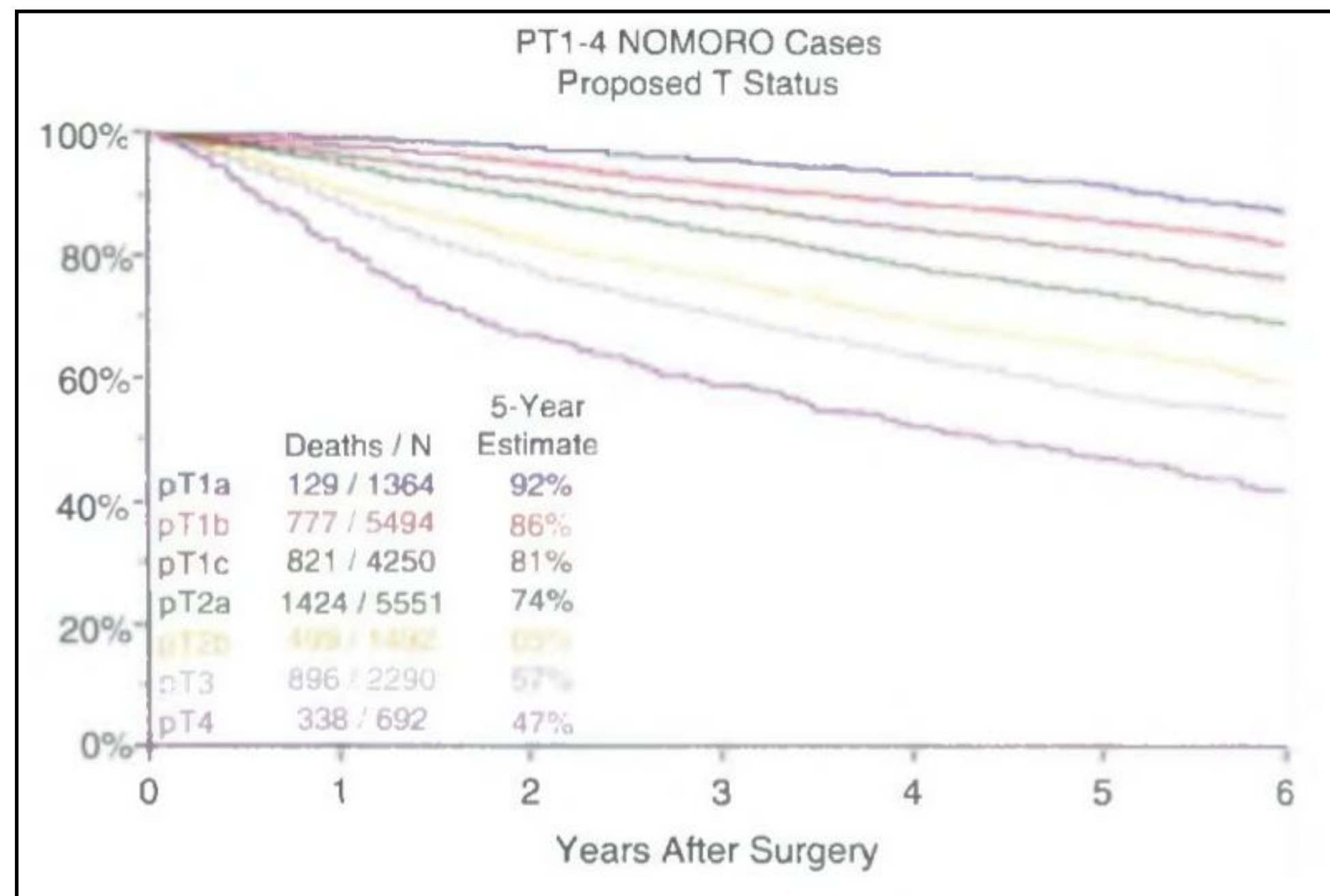
# TMH data

## uVATS anatomical lung resection

- May 2017 to Feb 2021, n=106
- Median length of hospital stay- 4 days
- Post operative mortality- 0.9%
- Morbidity (CD IIIa and above)- 13.2%

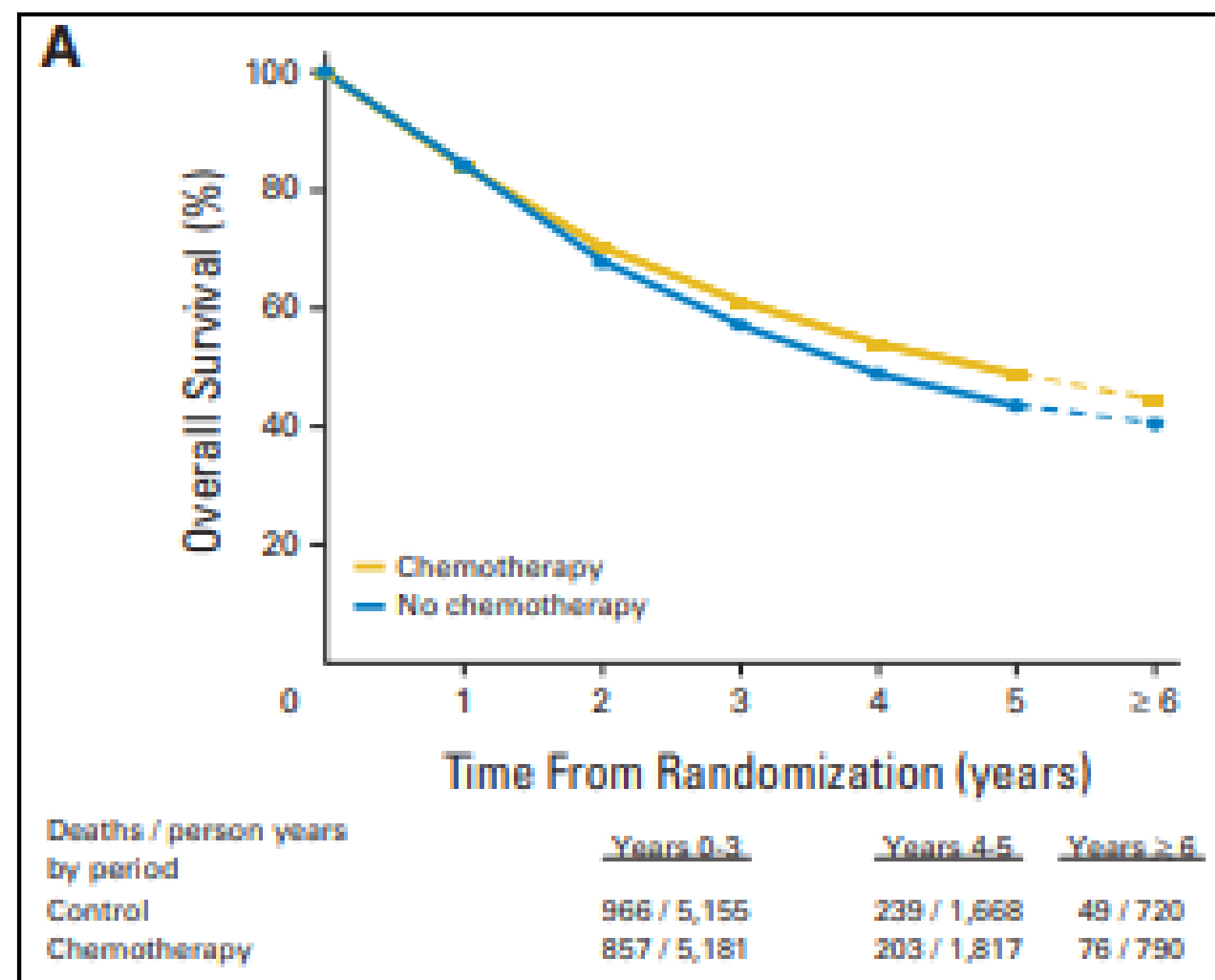
# Results of Surgery

- Outcome worsens- as the stage advances



# Role of systemic therapy

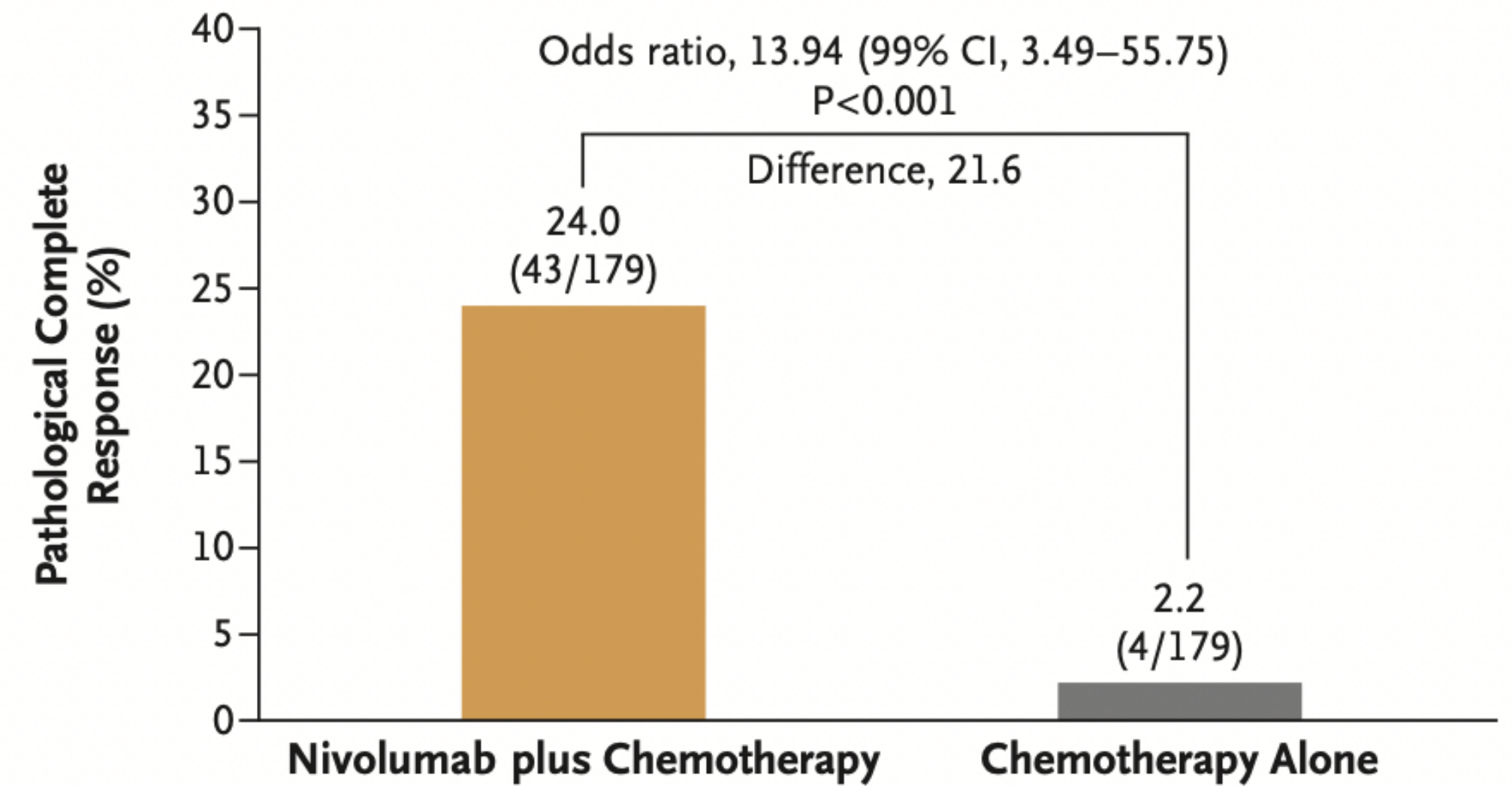
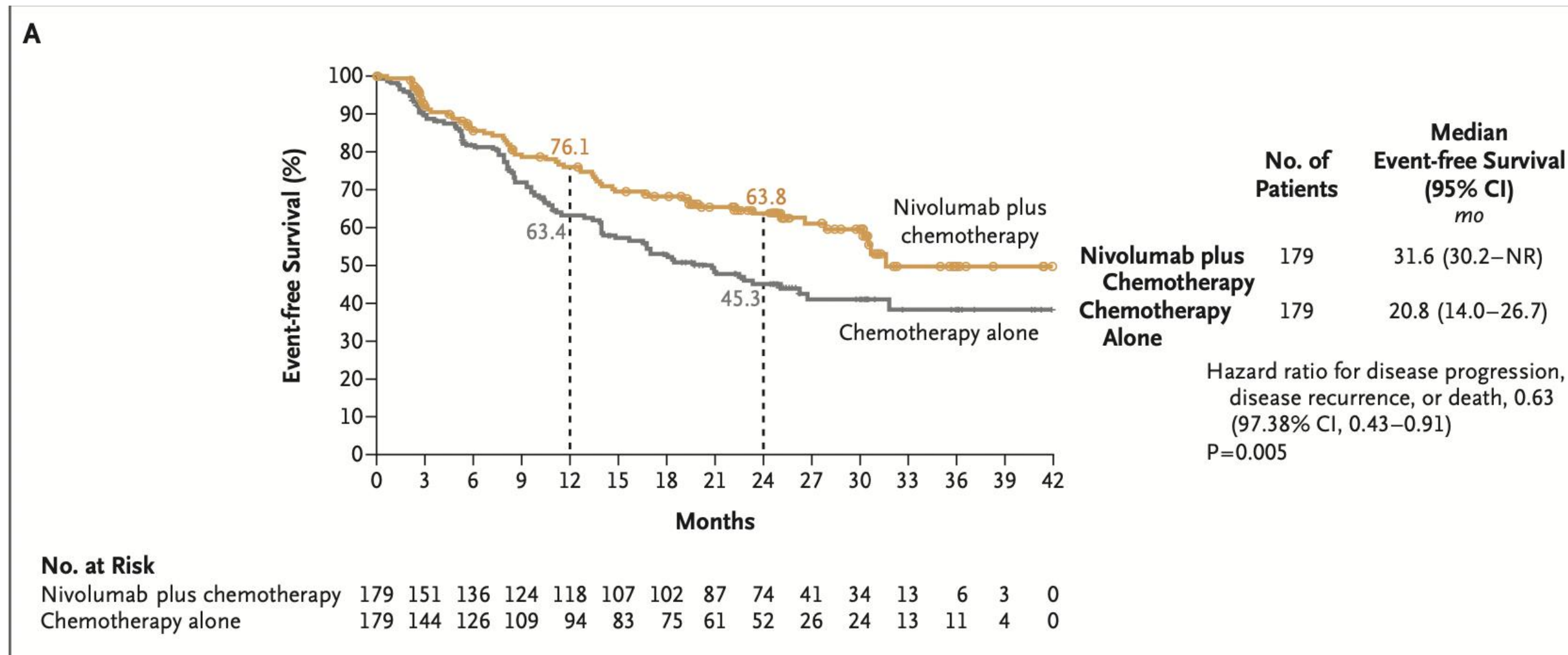
- Need for systemic therapy to improve outcome
- LACE meta-analysis-
  - Overall 5.4% , 5 year survival benefit



Stage	HR
IA	1.40
IB	0.93
II	0.83
III	0.83

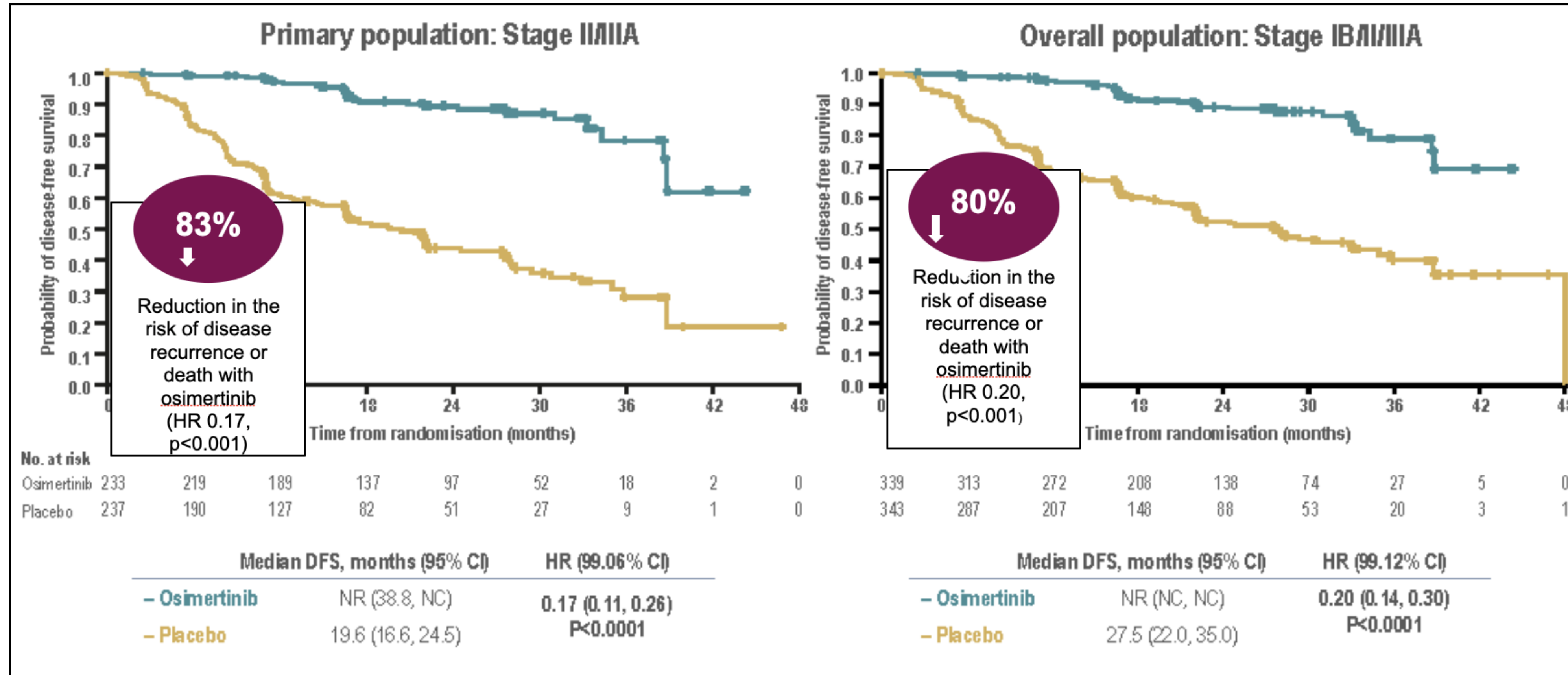
# Unmet need

## Checkmate 816



# Unmet need

## ADAURA



# Conclusion

- Surgery- Standard of care in early stage NSCLC
- MIS- VATS preferred
- Lobectomy + SMLND
- Unmet need persists- multiple ongoing trials



*Thank You*