

P1.229: The 6-min Walk Test for Surgical Invasiveness of Segmentectomy vs Lobectomy for Non-Small-Cell Lung Cancer: A Multicenter Prospective Study

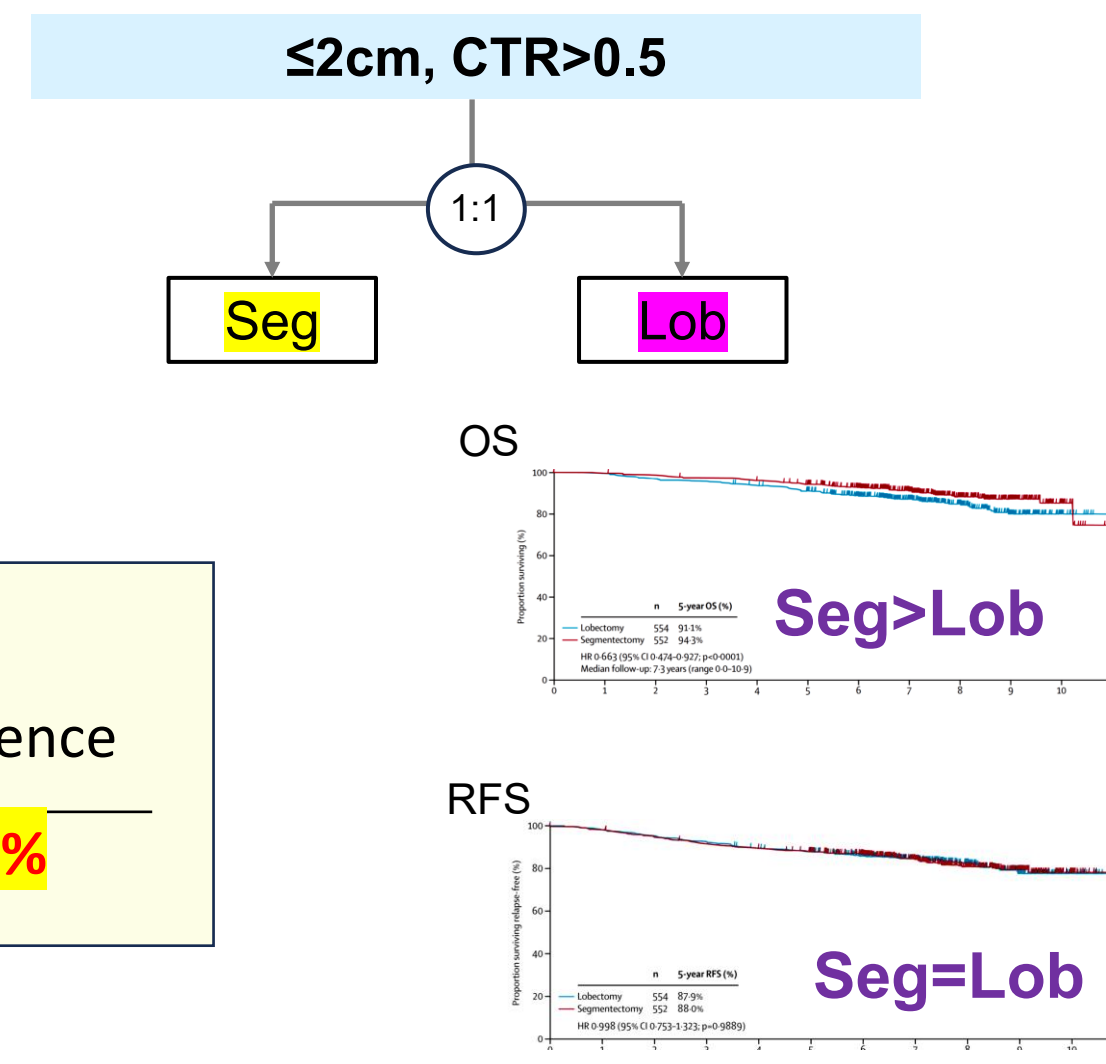
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Backgrounds

JCOG 0802 (Lobectomy vs. Segmentectomy)

- ✓ **OS: Segmentectomy > Lobectomy**
- ✓ **Respiratory benefit of segmentectomy was only 3.5% over lobectomy.**
- ✓ **Lower than the expected difference of ≥10%.**

Study schema



FEV _{1.0}				
Proportion of decrease in 1 year	Lobectomy (n=526)	Segmentectomy (n=528)	P-value	Difference
Median	-12	-8.5	< 0.0001	3.5%

Hypothesis

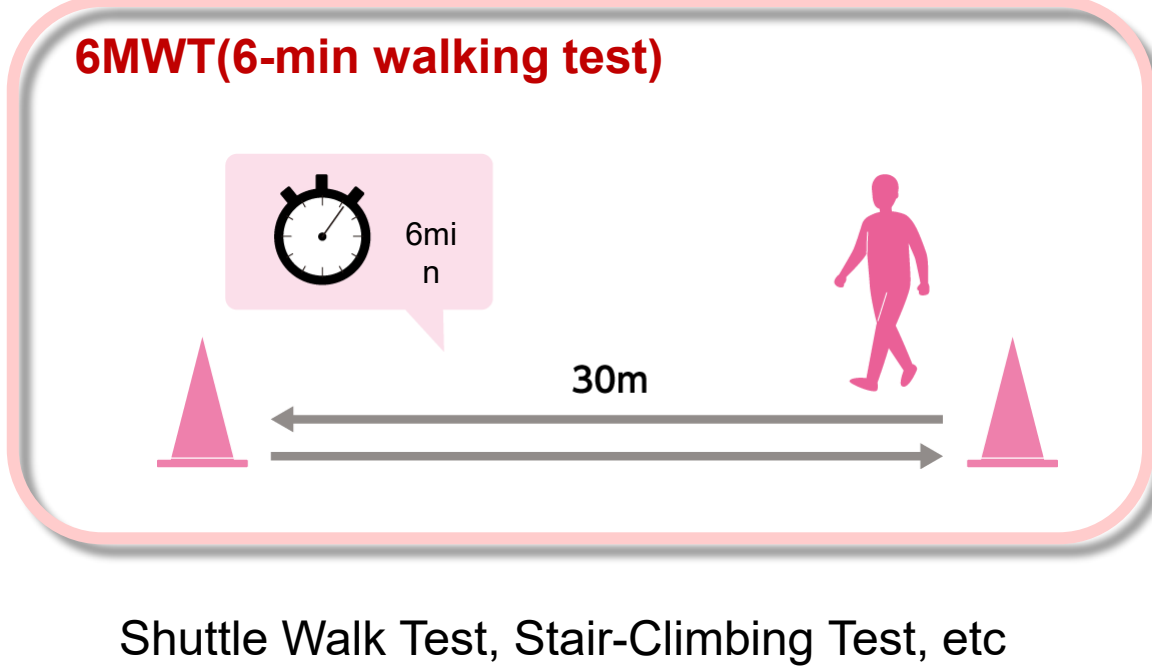
- FEV_{1.0} may not be an appropriate indicator for preserved lung parenchyma.**
- ✓ It is necessary to investigate **clinically meaningful** parameters.
 - ✓ Evaluation of **cardiopulmonary function** is essential.

Methods for evaluating cardiopulmonary function

CPET: cardiopulmonary exercise test



CPET	6WMT
Quantitative	Indirect walking distance
Relatively accurate	Slightly inferior
Difficult	Easy
High	Low
High	Low
	Expertise



- ✓ **In this study, cardiopulmonary function was evaluated primarily using the six-minute walk test, considering cost, universality, and feasibility.**

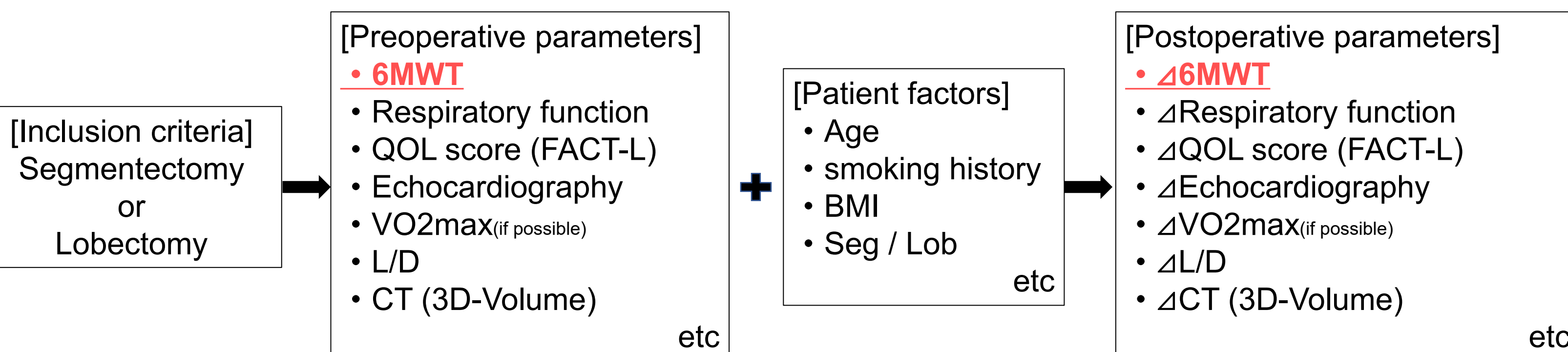
Objective

To explore novel parameters that reflect the less invasive nature of segmentectomy compared to lobectomy.

Methods

Primary endpoint: Difference in 6-minute walk distance (6MWD) before and after surgery

Multicenter prospective observational study



Comparative evaluation of each parameter

Results

Figure 1 Patient flow

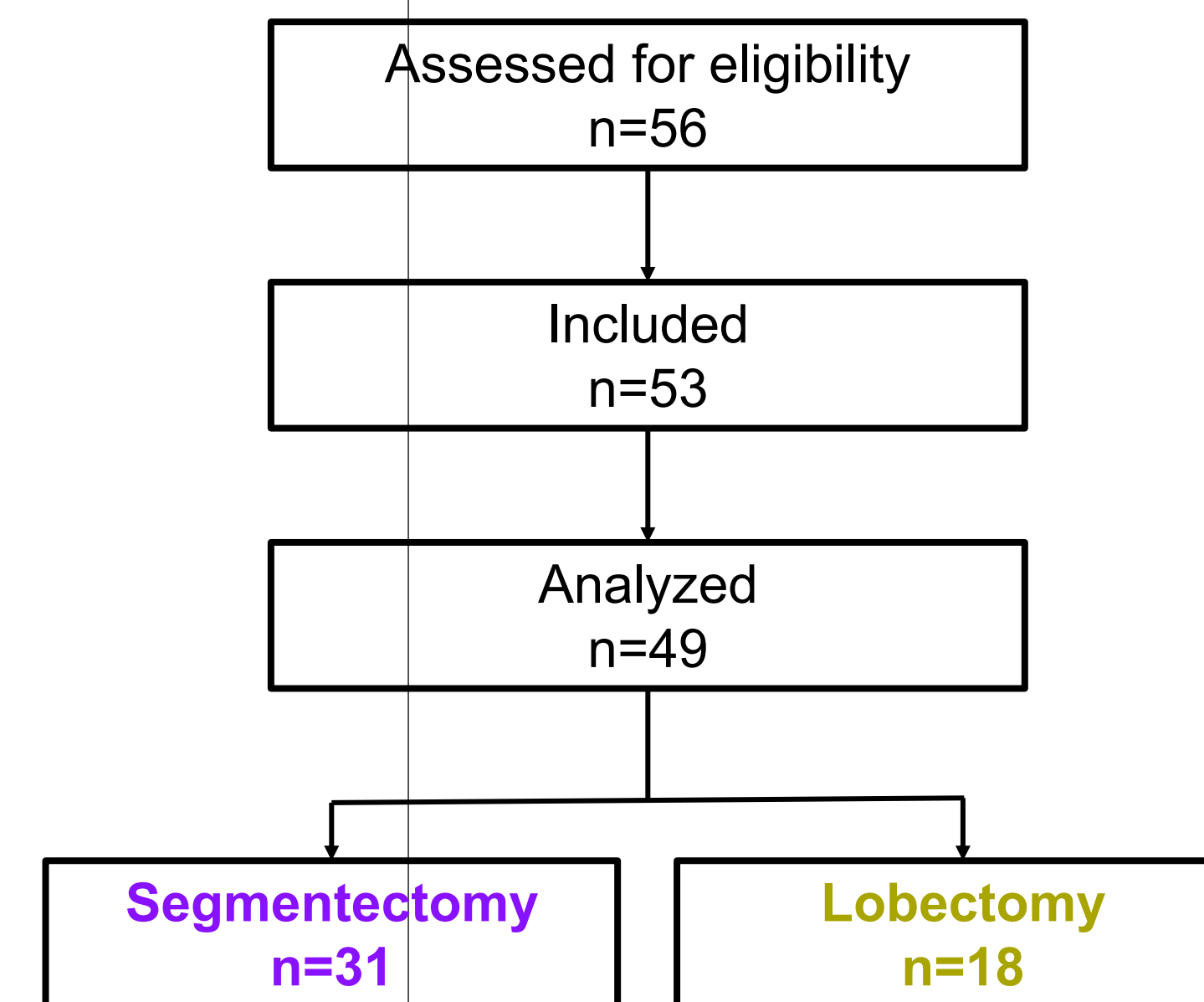
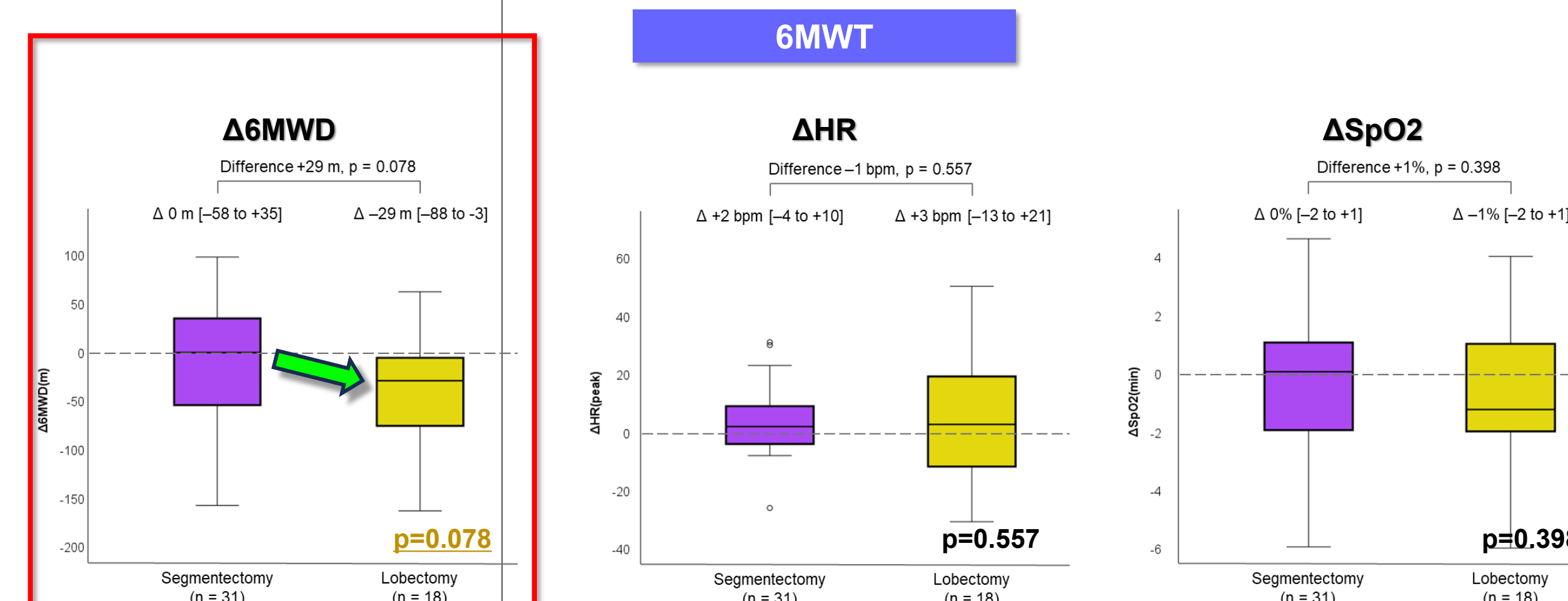


Table 1 Patient characteristics

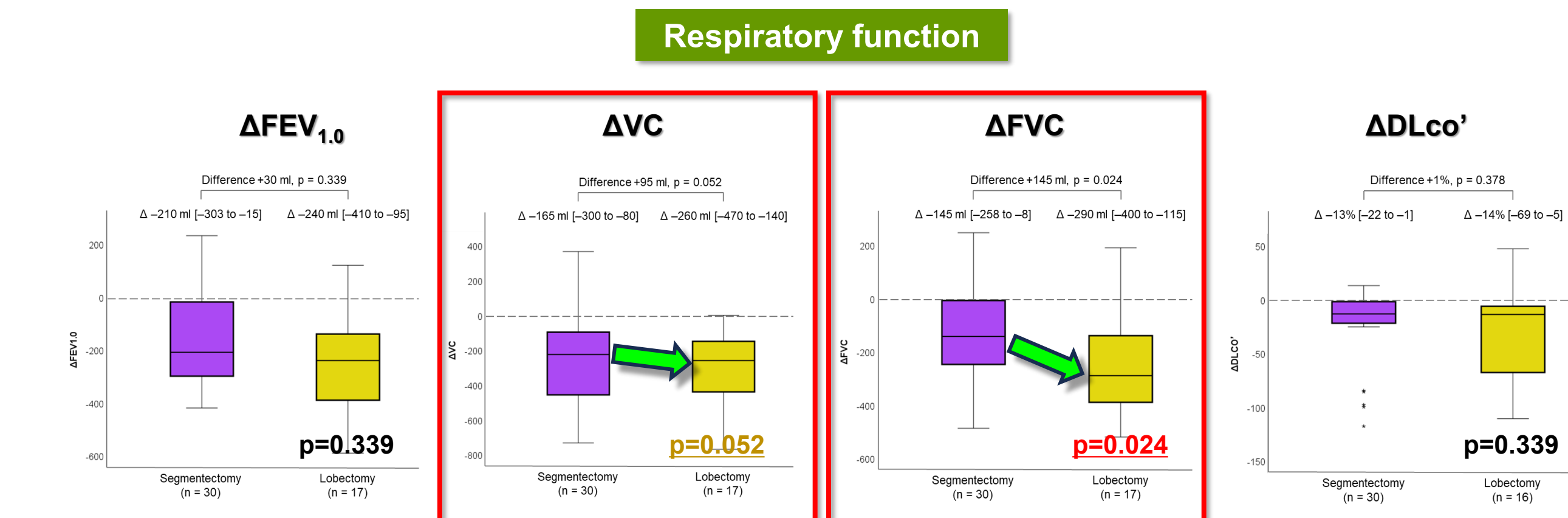
Variables	Category	Segmentectomy n = 31	(%)	Lobectomy n = 18	(%)	p
Age (years)	Median [Q1-Q3]	70	[63-74]	70	[62-78]	0.857
Sex	Male	15	(45)	11	(58)	0.637
BMI	Median [Q1-Q3]	24.4	[22.2-25.8]	23.7	[21.9-25.0]	0.991
Smoking status	Ex- or current	16	(52)	12	(63)	0.529
CONUT score	Median [Q1-Q3]	1	[0-1]	1	[0-2]	0.891
BNP	Median [Q1-Q3]	14.9	[10.4-27.0]	12.5	[5.9-28.1]	0.283
EF	Median [Q1-Q3]	64	[61-68]	68	[65-70]	0.055
FEV _{1.0}	Median [Q1-Q3]	2310	[2050-2535]	2355	[1940-2698]	0.935
FVC	Median [Q1-Q3]	3040	[2590-3330]	3075	[2490-3385]	0.683
VC	Median [Q1-Q3]	3050	[2680-3476]	3135	[2638-3355]	0.739
6MWT (m)	Median [Q1-Q3]	495	[415-550]	468	[398-518]	0.489
SpO ₂ (min)	Median [Q1-Q3]	94	[93-95]	95	[94-96]	0.093
HR (peak)	Median [Q1-Q3]	110	[102-128]	107	[93-115]	0.339
FACT-L TOI	Median [Q1-Q3]	71	[66-80]	70	[63-80]	0.491
FACT-L	Median [Q1-Q3]	110	[103-120]	110	[100-115]	0.308

Figure 2 Comparison of individual pre- to postoperative changes



**[6MWT]
+29-m difference in the 6MWD (p=0.078).**

Figure 3 Comparison of individual pre- to postoperative changes



**[Pulmonary function]
+95-mL difference in the VC (p=0.052).
+145-mL difference in the FVC (p=0.024).
FEV1.0 showed no difference (p=0.339).**

Discussion

- To our knowledge, **this is the first prospective study comparing 6MWT** outcomes between segmentectomy and lobectomy.
- 6MWD may reflect surgical invasiveness** as a marker of cardiopulmonary function.
- VC and FVC may be more useful** than FEV_{1.0} for postoperative functional assessment.
- As a pilot study, these findings support **further investigation**.

- **Long-term follow-up is needed to evaluate correlations with prognosis and non-cancer-related death.**
- **Although ppoFEV_{1.0} < 800 mL has been used as a criterion for operability for approximately 40 years, it should be re-evaluated from various perspectives.**

Conclusion

The 6MWT was suggested as a potential indicator reflecting the difference in surgical invasiveness between segmentectomy and lobectomy.

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No potential conflicts of interest to report