Comparison of procedural workflow, safety, and one-year efficacy of catheter ablation of atrial fibrillation using radiofrequency and pulsed-field energy

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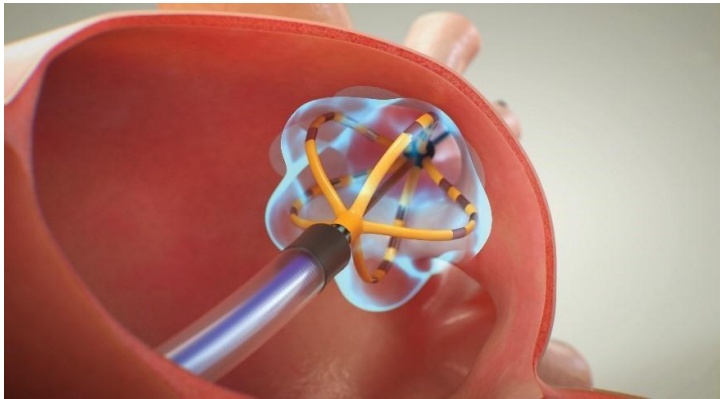
Introduction

- Pulsed-field ablation (PFA): Emerging technology for AF ablation.
- Radiofrequency ablation (RFA): Established method.
- Study Aim: Single-center comparison of PFA vs RFA.

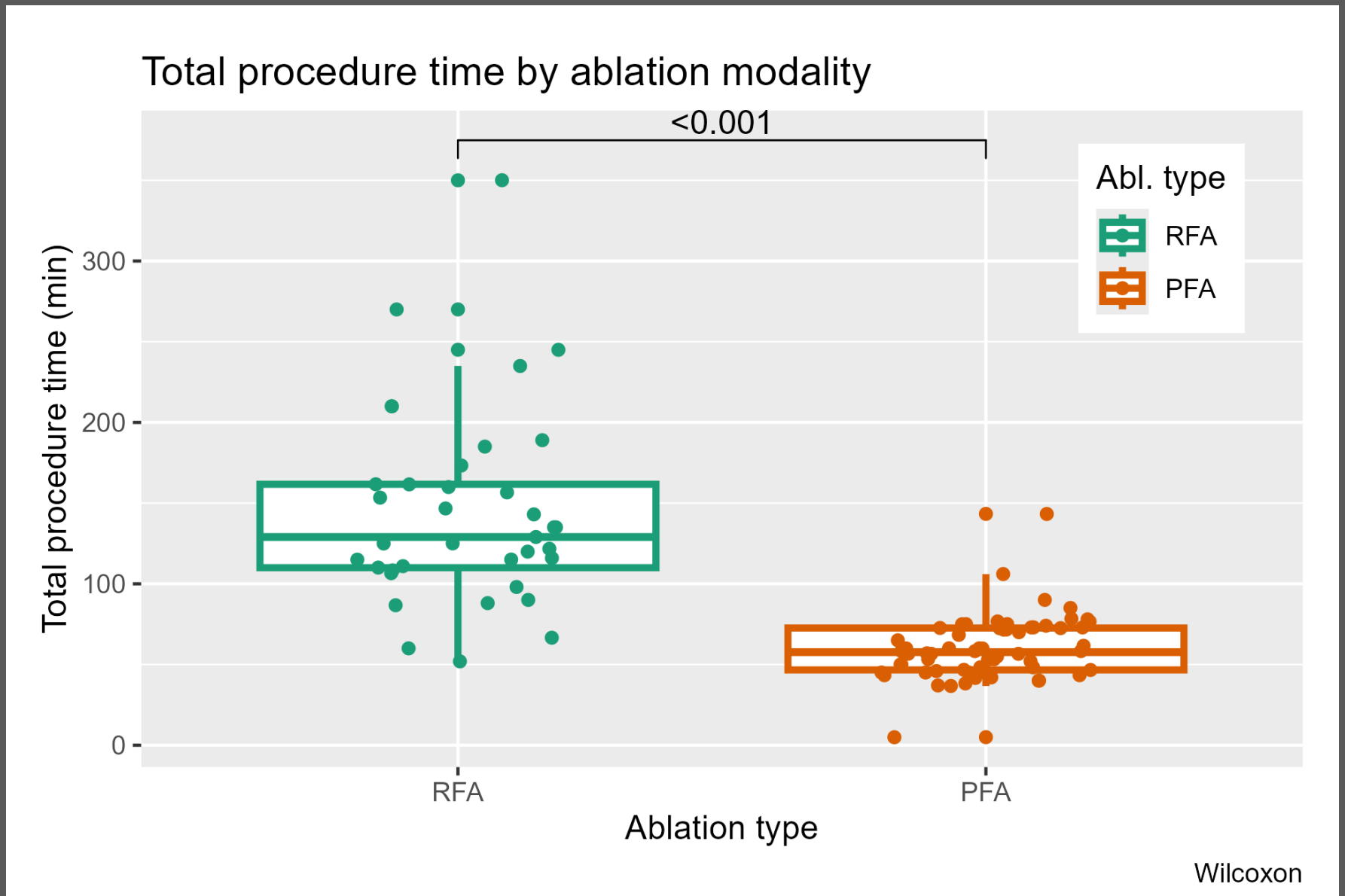
Study Methods

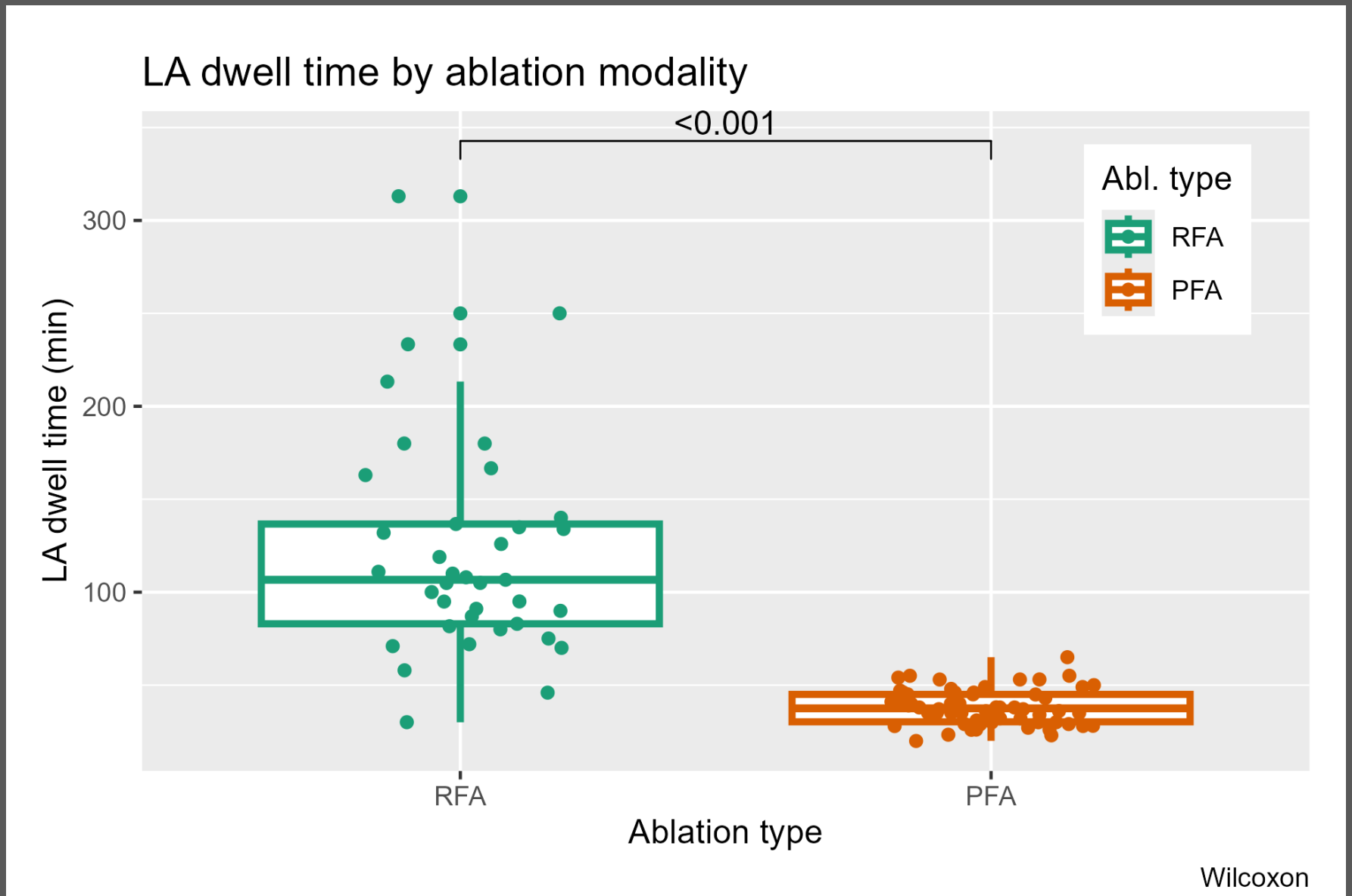
- Single center, non-randomized, cohort study.
- All consecutive patients were enrolled
- 437 patients: 319 PFA, 118 RFA.
- Paroxysmal AF: Only PVI.
- Non-paroxysmal AF: Posterior wall and MI isthmus in PFA group. In the RF group, additional ablations beyond PVI on the operator‘s discretion.
- 24-hour Holter monitoring and clinical check-up 3, 6-9 and 12 months after AF ablation to assess SR maintenance.

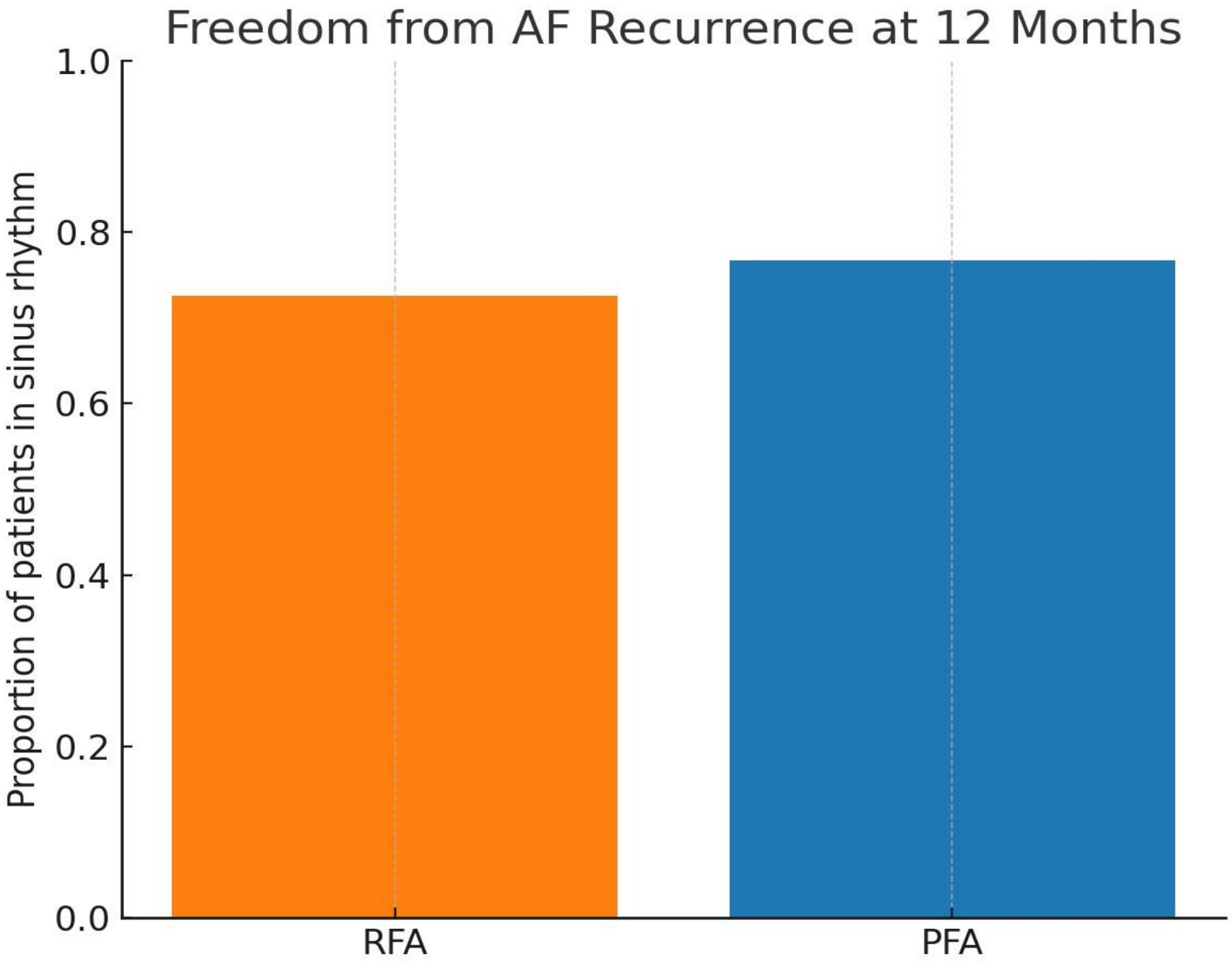


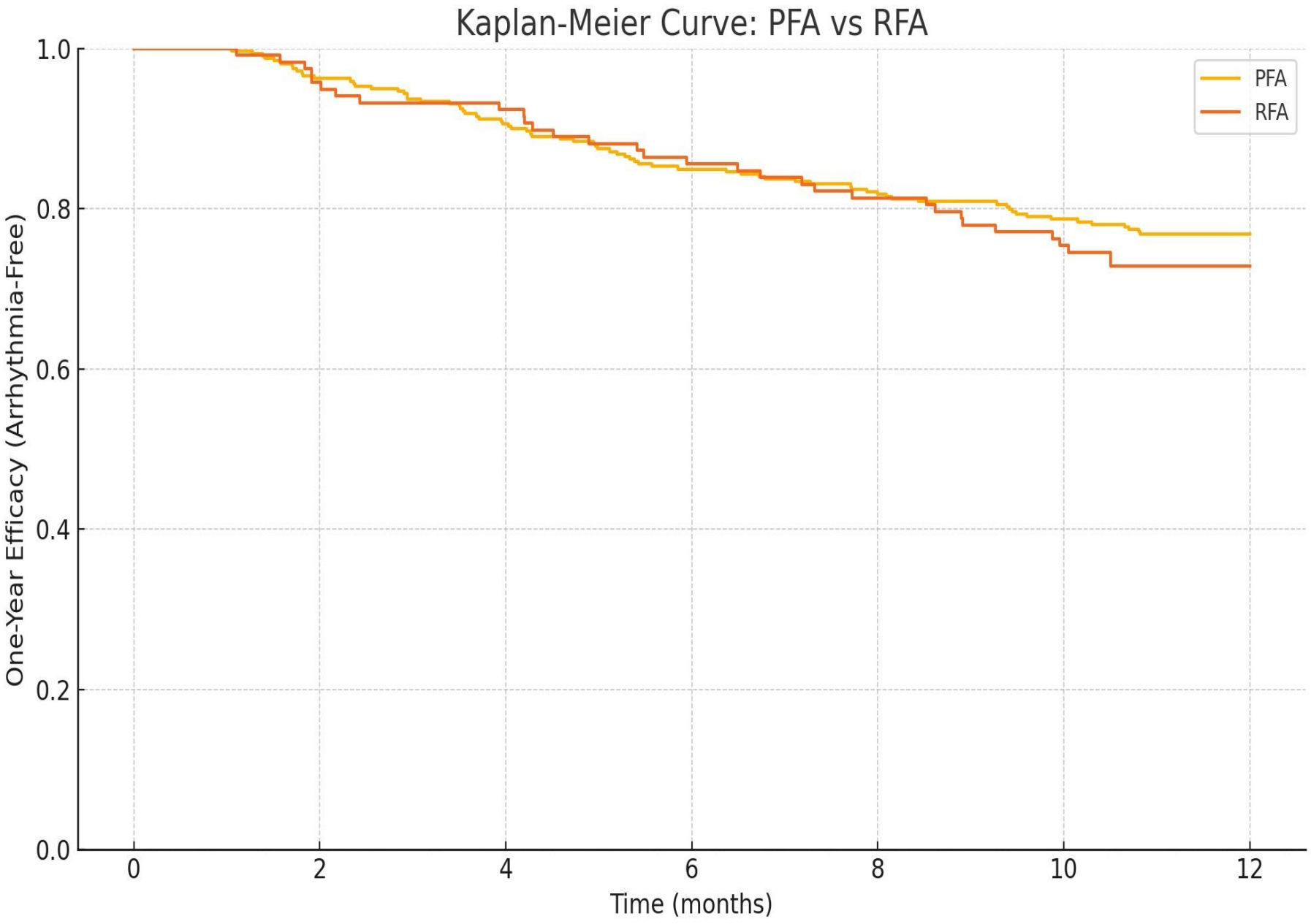
Patient Characteristics

	PFA group 319	RFA group 118	p
Age	63.1± 12.7	65.4 ± 10.7	0.05
Male sex (%)	207 (65.3)	84(72.1)	0.27
Hypertension (%)	212 (66.7)	81 (68.8)	0.99
Diabetes mellitus (%)	57 (18.2)	37 (31.3)	0.26
Body mass index	29.9 ± 4.9	30.3 ± 5.2	0.20
CHA_2DS_2VASc score	2.39 ± 1.68	2.28 ± 1.69	0.79
Paroxysmal AF (%)	159(49.8)	73 (62)	0.03
ECHOcardiography			
LV EF (%)	42.6 ± 4.8	41.2 ± 4.9	0.75
LA size (mm)	41.7 ± 5.8	43.3 ± 5.1	0.25
Medication			
Current AAD use (%)	145 (45.5)	63 (53.1)	0.62


Total procedure time by ablation modality
<0.001
Abl. type
RFA
PFA
Total procedure time (min)
300
200
100
0
RFA
PFA
Ablation type
Wilcoxon


LA dwell time by ablation modality
<0.001
Abl. type
RFA
PFA
300
200
100
LA dwell time (min)
RFA
PFA
Ablation type
Wilcoxon

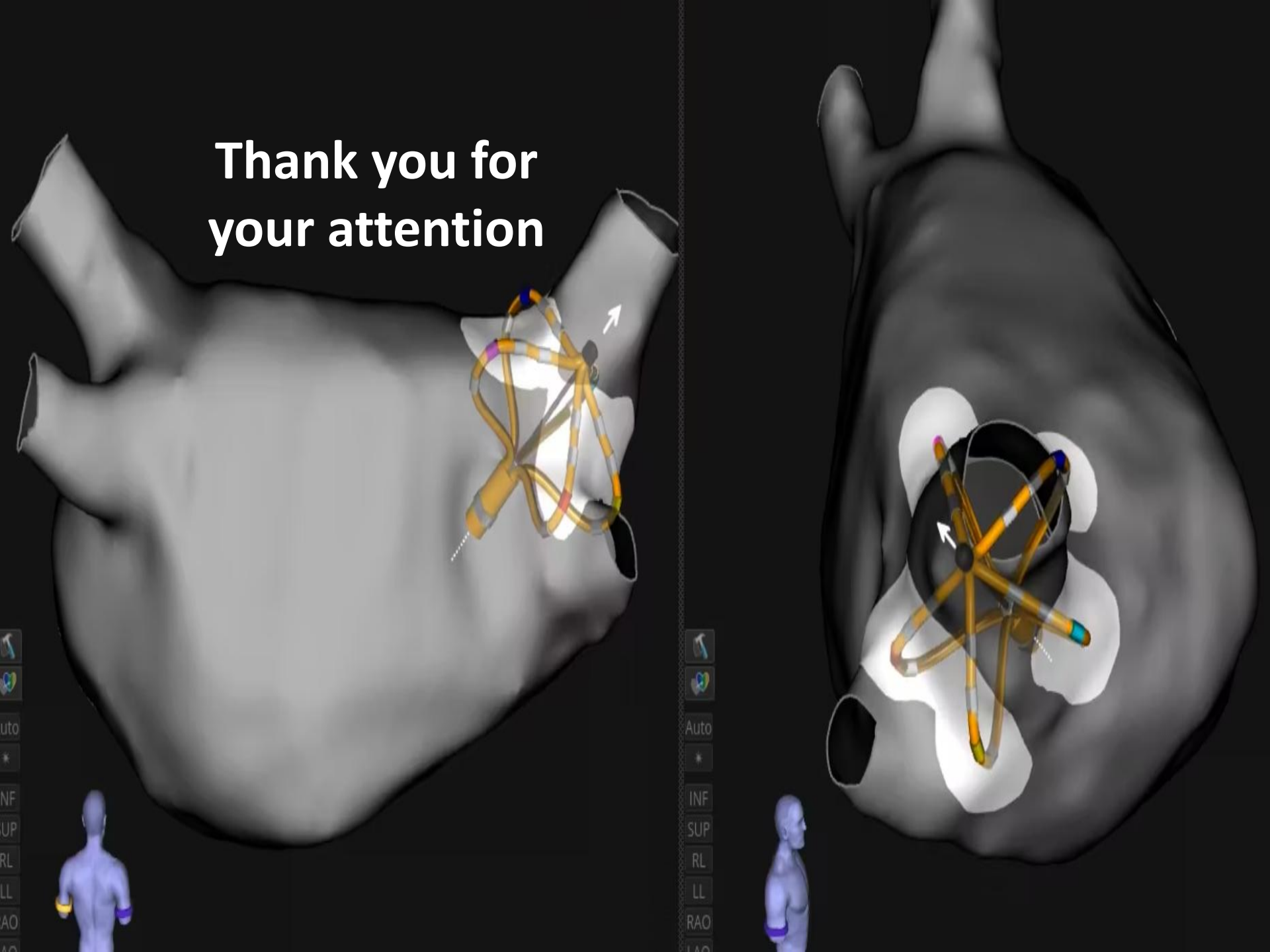

Freedom from AF Recurrence at 12 Months
Proportion of patients in sinus rhythm
1.0
0.8
0.6
0.4
0.2
0.0
RFA
PFA


Kaplan-Meier Curve: PFA vs RFA
One-Year Efficacy (Arrhythmia-Free)
Time (months)
PFA
RFA
1.0
0.8
0.6
0.4
0.2
0.0
0
2
4
6
8
10
12

Safety Profile

- Major adverse events: 1 in each group.
- Cardiac arrest (PFA), pericardial effusion (RFA).
- Very low complication rates overall.

Conclusion

- PFA associated with:
- - Shorter procedural and LA dwell times.
- - Similar safety profile.
- - Comparable 1-year efficacy.

Thank you for your attention