

Prediction of Sinus Rhythm Maintenance Using Clinical Parameters Following Atrial Fibrillation Ablation With Pulsed- Field and Radiofrequency Energy

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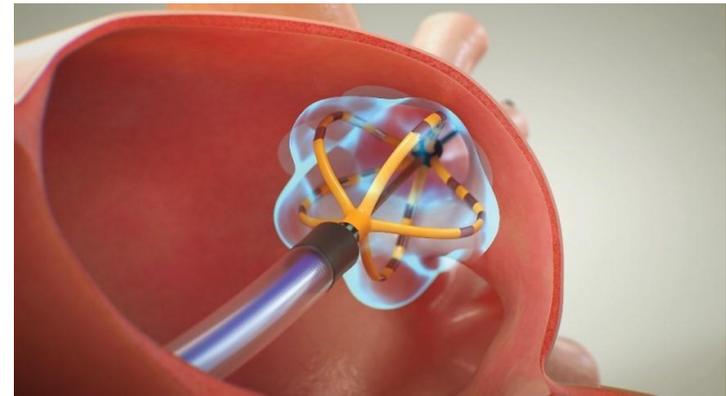


Background & Aim

- PFA and RFA are both effective for AF ablation
- Predictors of sinus rhythm (SR) maintenance remain unclear.
- **Aim:** Identify baseline clinical predictors of 12-month SR maintenance after AF ablation using PFA and RFA

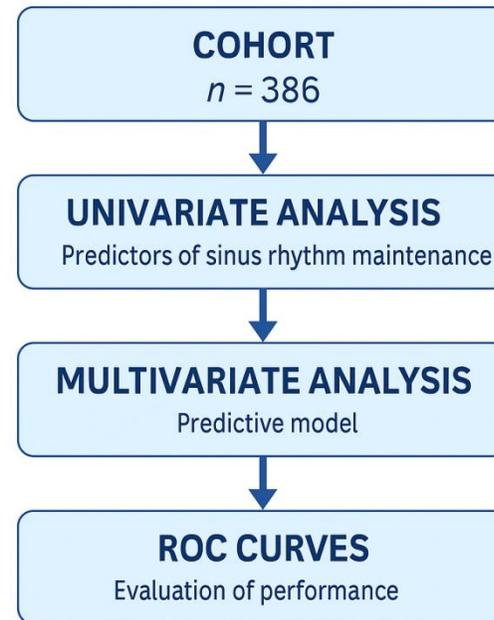
Methods I

- Single center, non-randomized, cohort study.
- All consecutive patients were enrolled
- 386 patients: 260 PFA, 126 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.



Methods II

- Prospective cohort (n = 386 ; 260 PFA 126 RFA)
- Logistic regression for predictors: age, sex, weight, BMI, IHD, HTN, EF, LA size, AF type, diabetes, ablation type
- Separate models for whole cohort + PFA + RFA

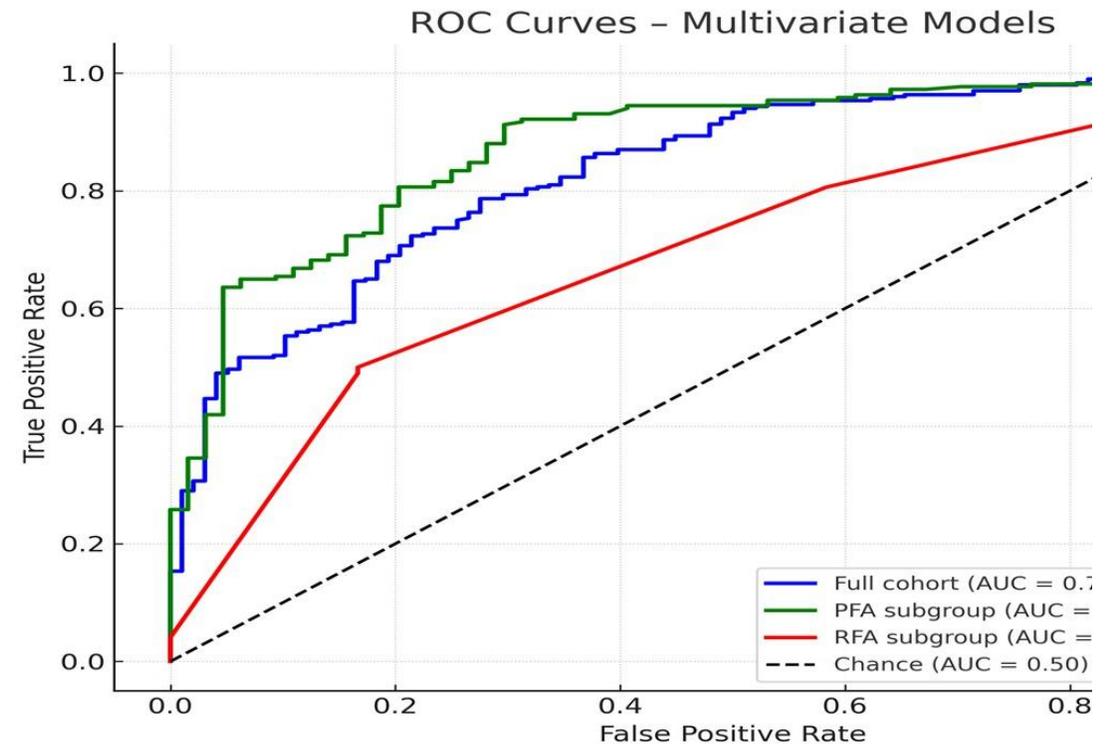


Patient Characteristics

| | PFA group 260 | RFA group 126 | 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 ₂ DS ₂ VASc 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 |
| | | | |

Results

- Whole Cohort (n = 386)
 - ↑ Age → lower SR (OR 0.96; p = 0.007)
 - ↑ Weight → lower SR (OR 0.97; p = 0.003)
 - Persistent AF → lower SR (OR 0.50; p = 0.03)
 - **Model AUC = 0.73**
- PFA Subgroup (n = 260)
 - ↑ Age (OR 0.92; p < 0.001)
 - ↑ Weight (OR 0.96; p < 0.001)
 - **Model AUC = 0.79 (best performance)**
- RFA Subgroup (n = 126)
 - Persistent AF → lower SR (OR 0.41; p = 0.04)
 - Baseline β-blocker use → higher SR (OR 2.98; p = 0.02)
 - **Model AUC = 0.69**



Conclusion

- Our analysis confirms that:
 - Sinus rhythm maintenance after ablation is strongly influenced by **age**, **body weight**, and **type of atrial fibrillation**.
 - The **predictive model showed the highest accuracy in the PFA subgroup (AUC = 0.79)**
 - Implementing a **simple clinical scoring system** could improve patient selection and enhance long-term treatment success.

**THANK
YOU!**

