

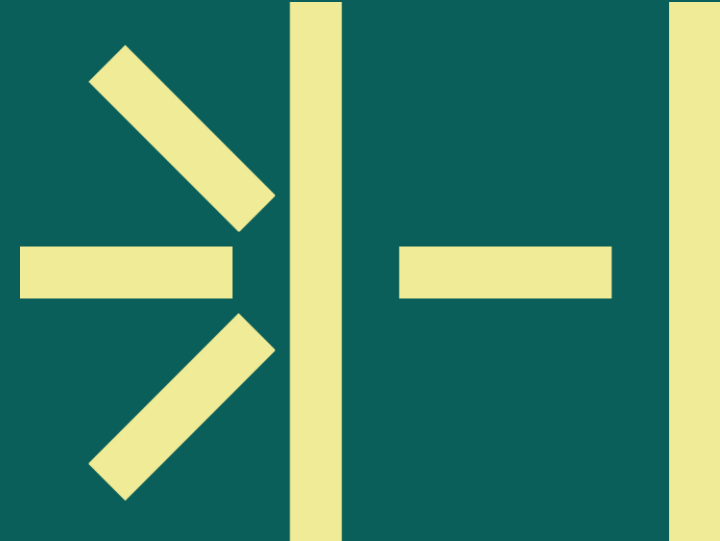
30 Jahre VHF

Was haben wir gelernt?

Stefan Osswald

Kardiologie

Universitäres Herzzentrum Basel



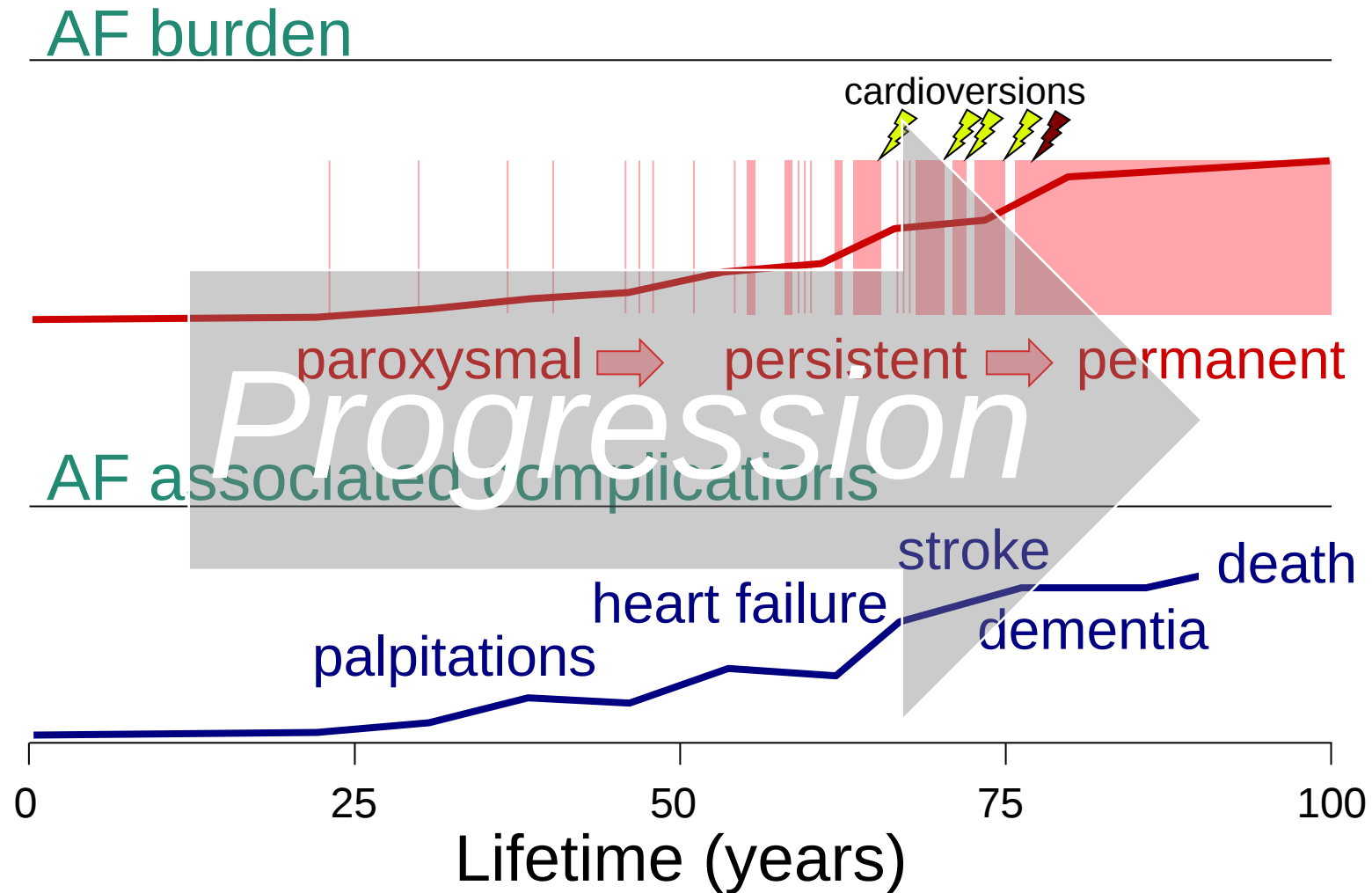
Agenda

- Konzept der Arrhythmogenese
- Therapie über die letzten 30 Jahre
- State-of-the-art 2024
- Was noch?

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Klinische Manifestation



Konzept der Progression

Paroxysmal ↔ Persistierend ↔ Permanent



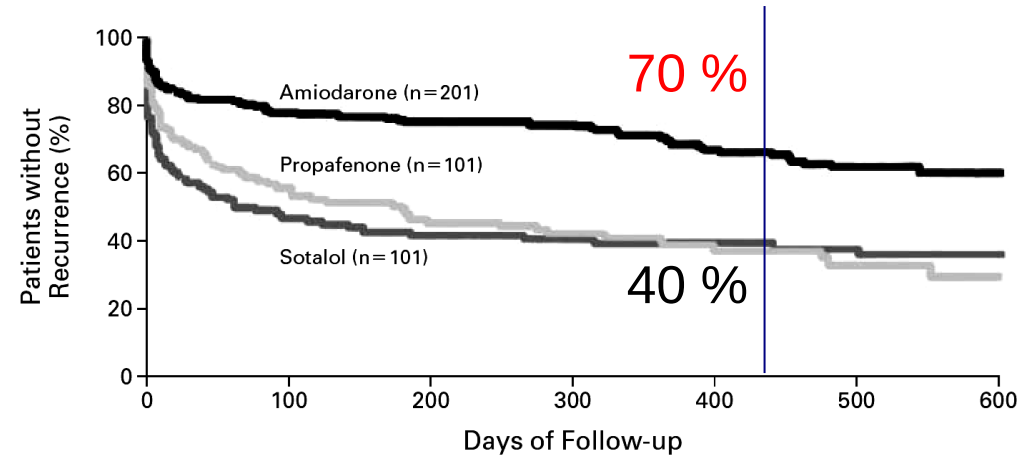
symptomatisch - oligosymptomatisch - asymptomatisch

Agenda

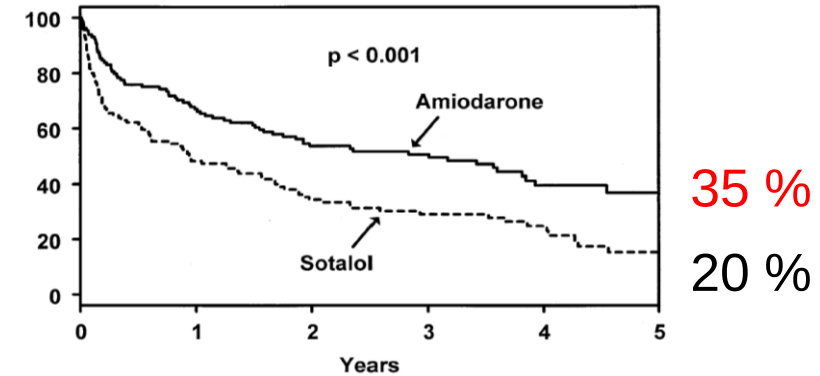
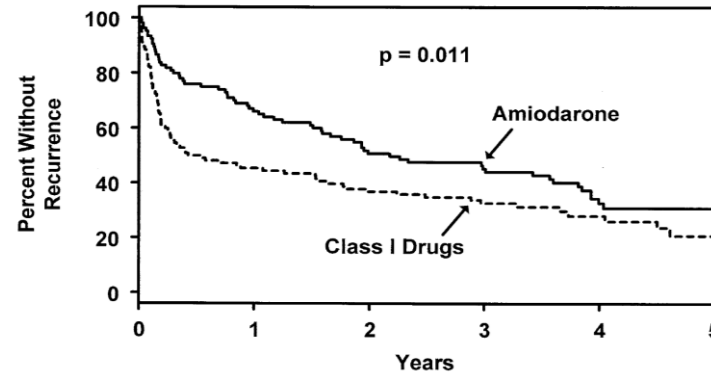
- Konzept der Arrhythmogenese
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Antiarrhythmics for Rhythm Control

CTAF
2000

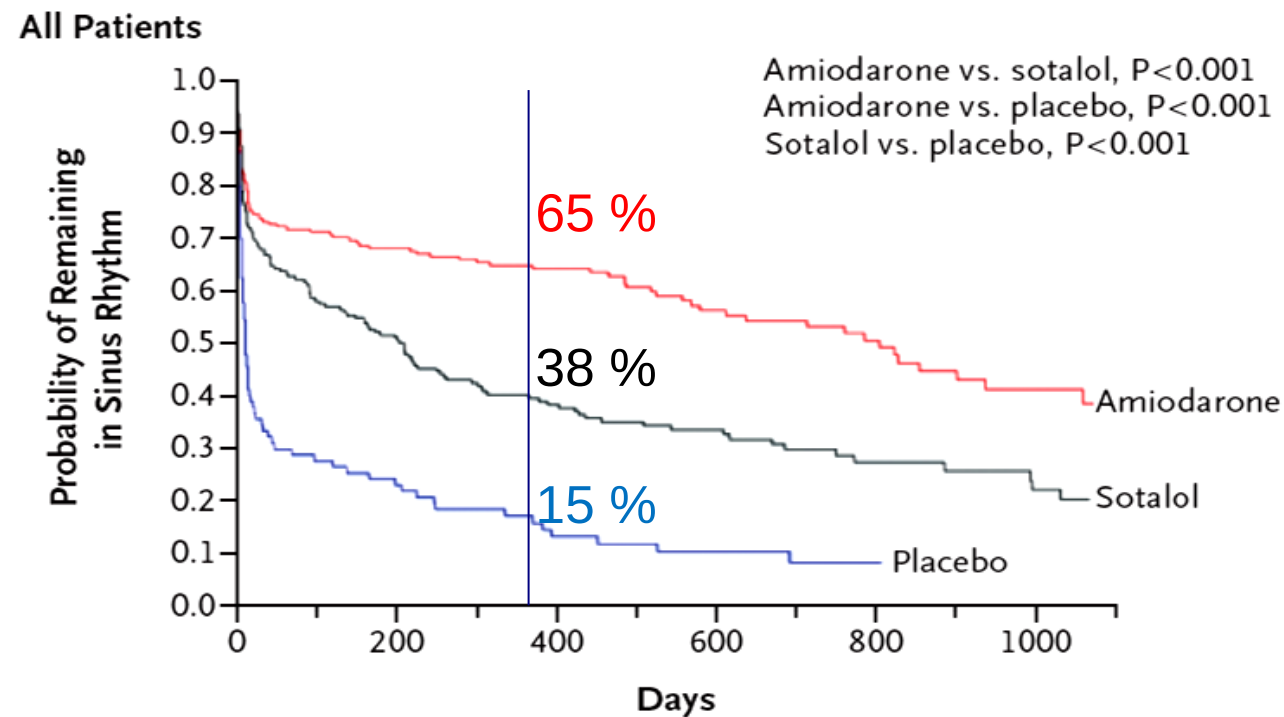


AFFIRM
2003



→ Amiodaron better than Sotalol & Class I

Sotalol or Amiodarone after AF-Conversion



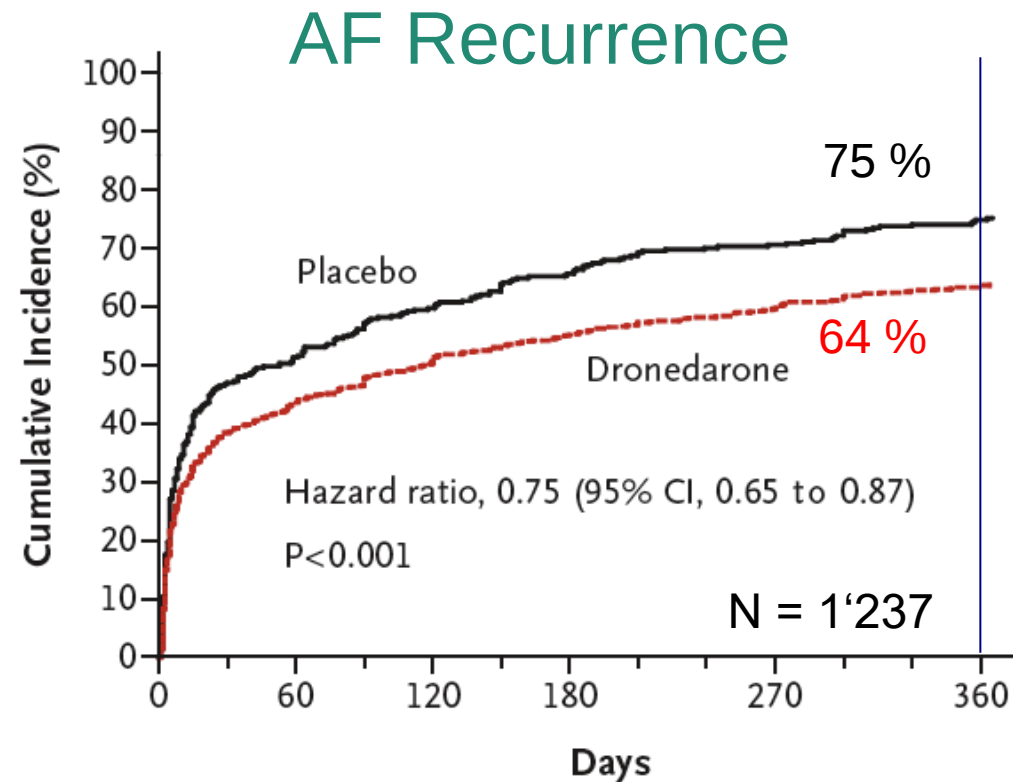
No. at Risk

Amiodarone	206	131	98	60	38	18
Sotalol	195	97	61	38	21	13
Placebo	90	21	11	8	5	2

SAFE-Trial

- Persistent AF
- Cardioversion
- Sotalol vs. Amiodarone vs. Placebo

Hopes & Hypes - Dronedarone for Maintenance of SR



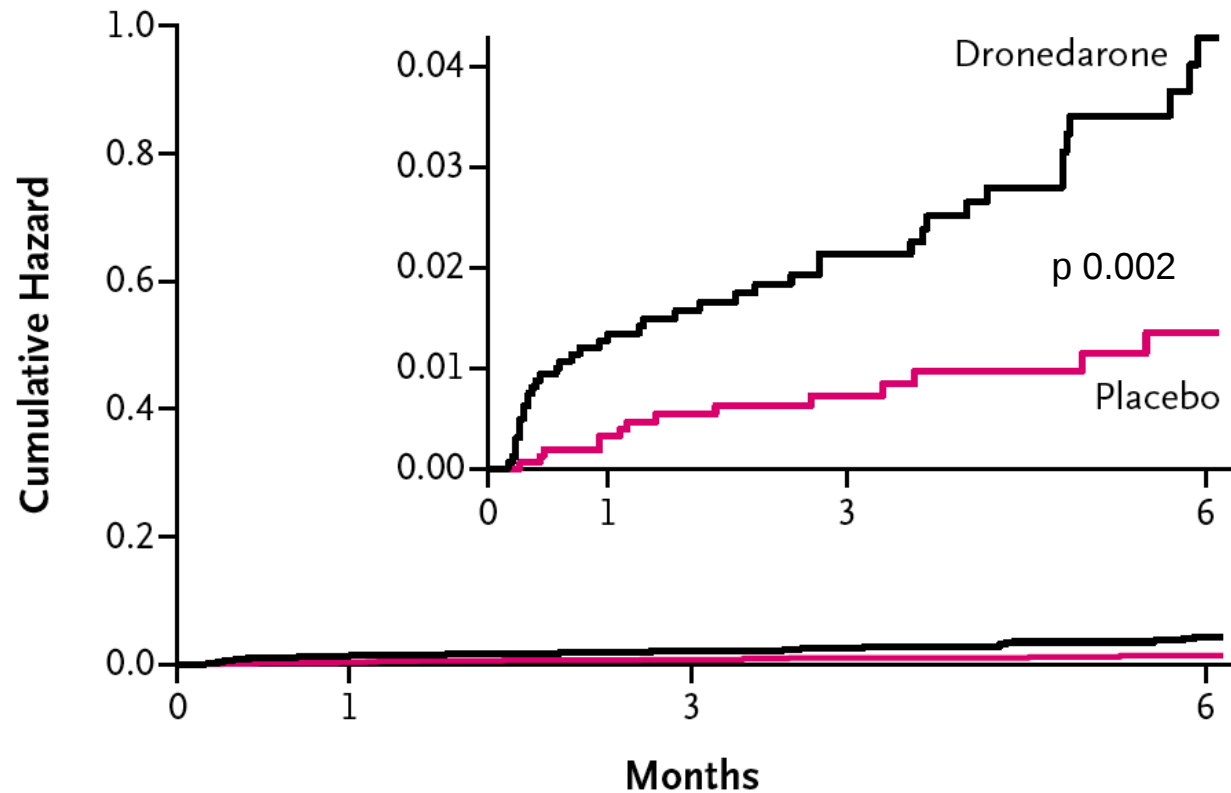
EURIDIS & ADONIS

- Persistent AF
- Cardioversion
- Dronedarone vs. Placebo

Dronedarone Safety - PALLAS Studie

Primary endpoint

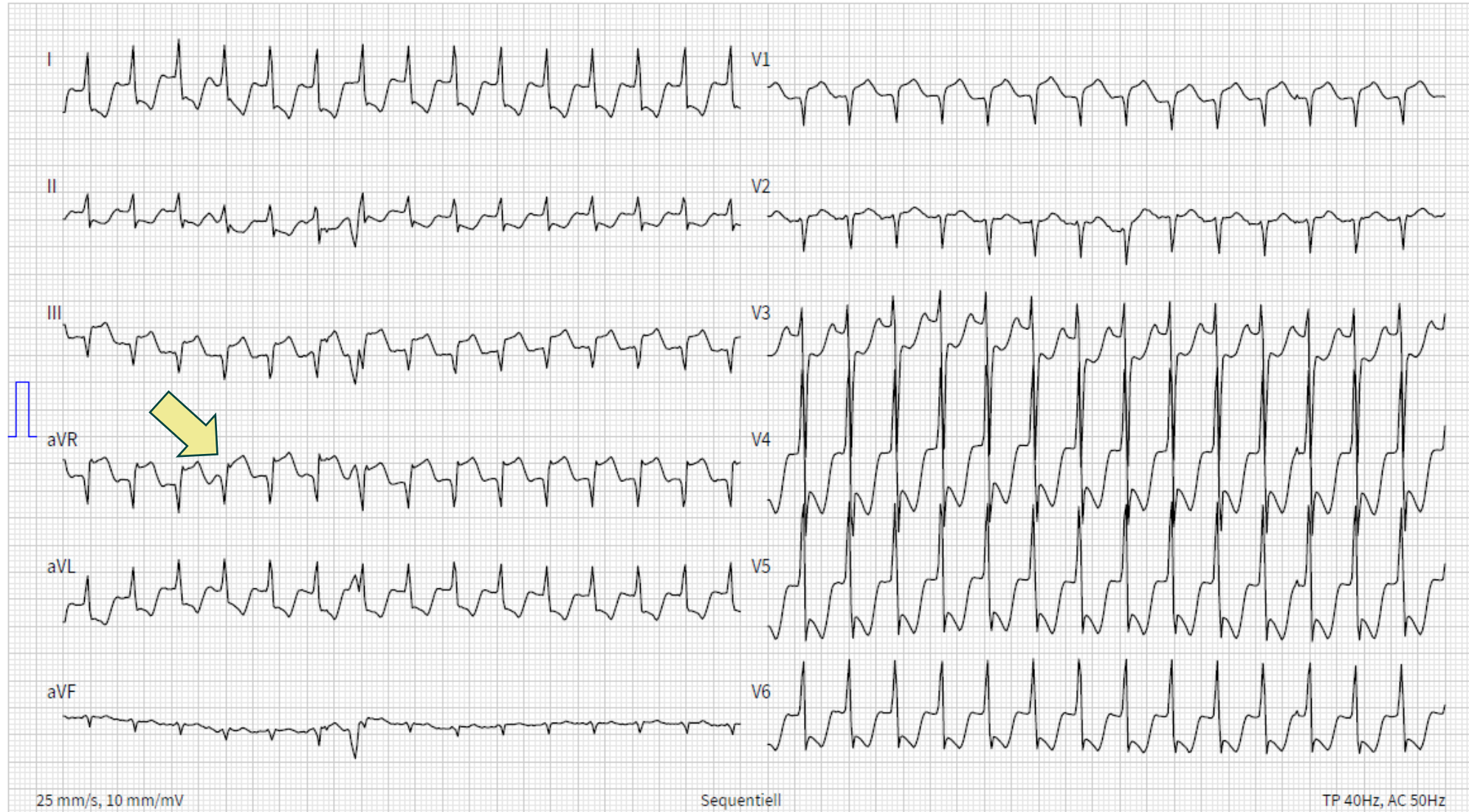
CV death, stroke, SE, MI



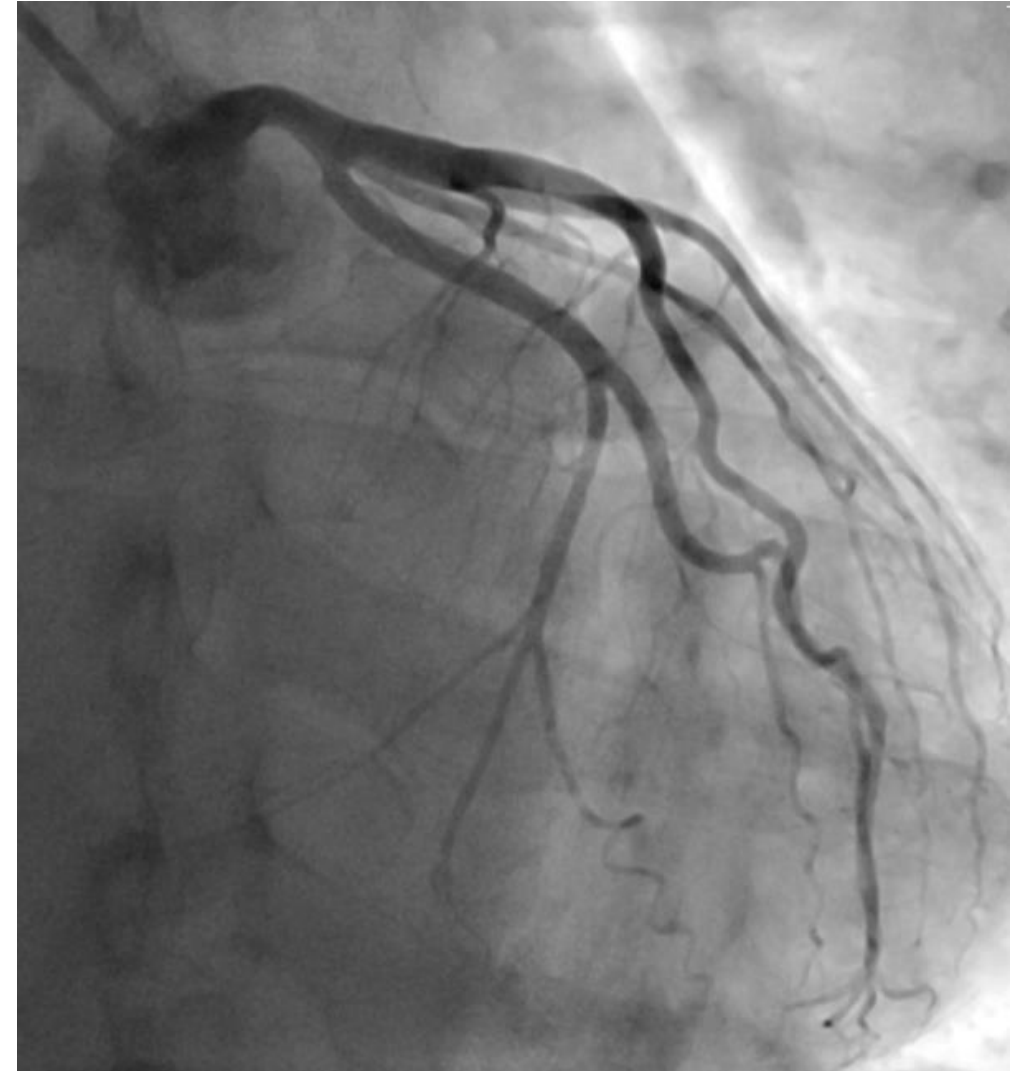
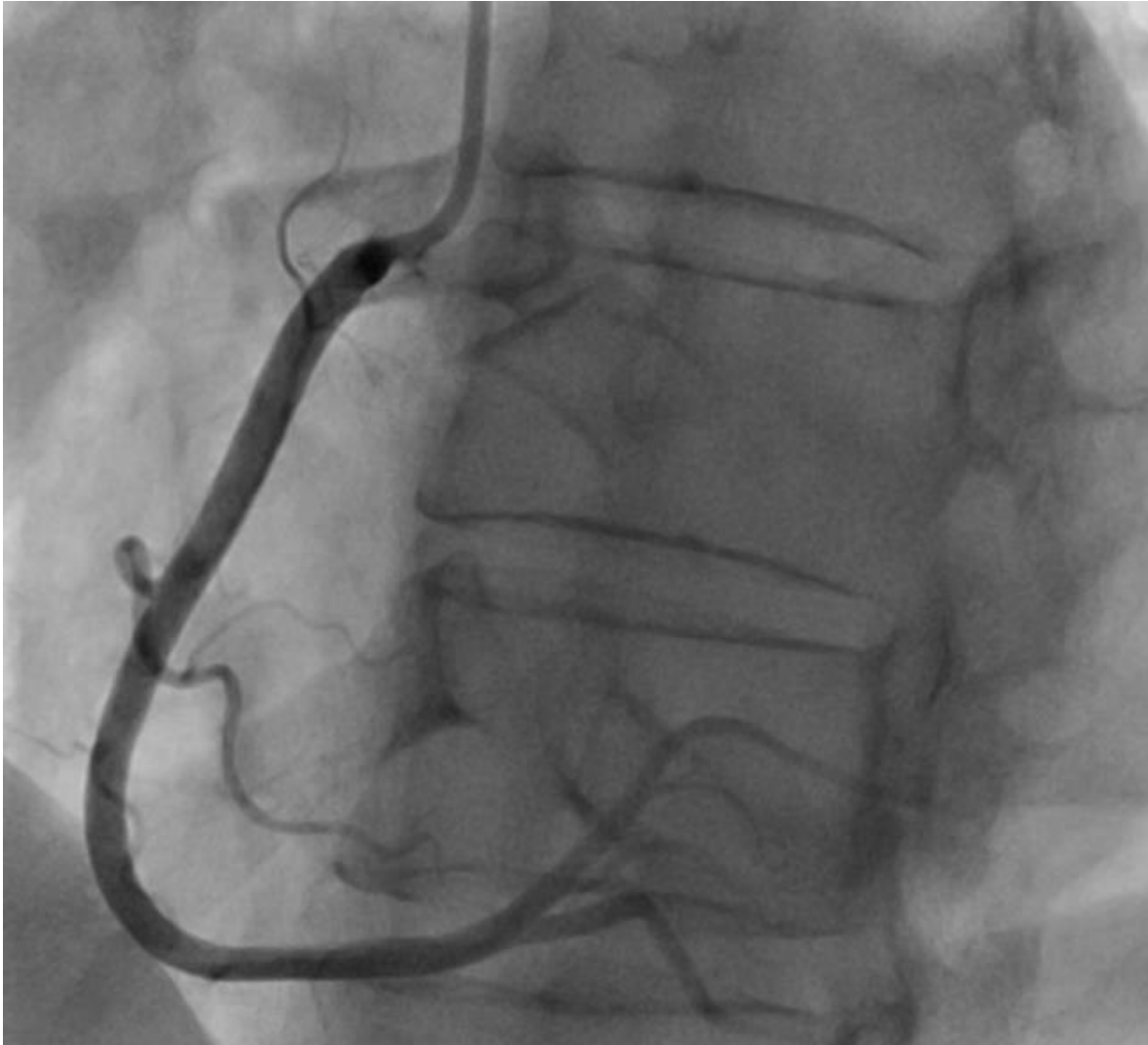
Study Design

- Permanent AF
- Dronedarone vs. Placebo

Kaltschweissige Patientin (64) mit Thorax-Sz +++

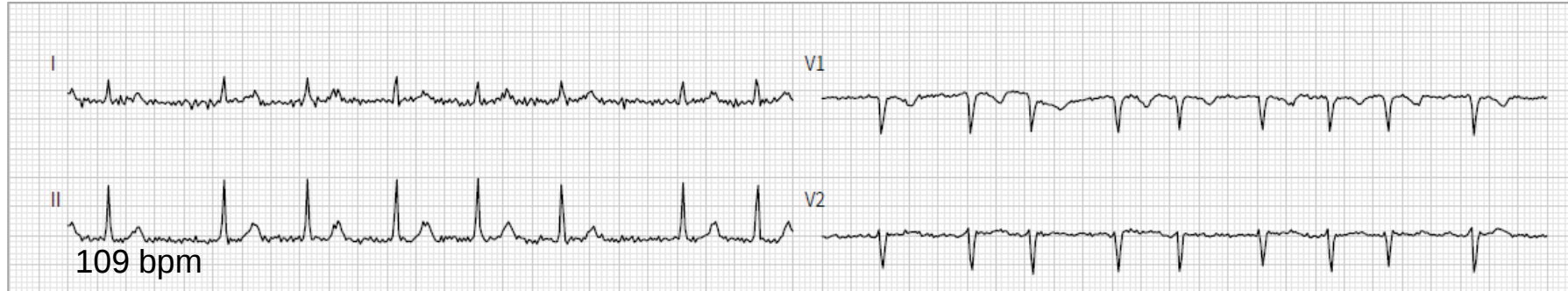


Kaltschweissige Patientin (64) mit Thorax-Sz +++



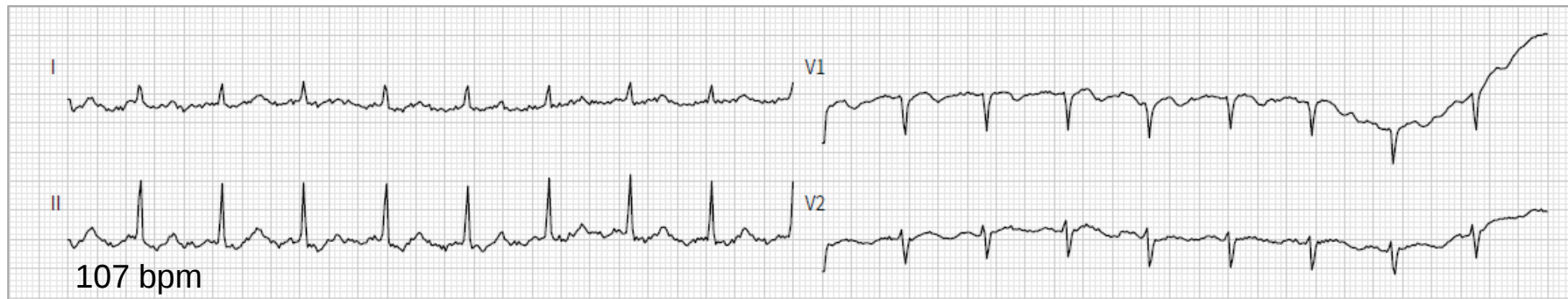
Eye-Catch – was ist das Problem ?

25.11.23

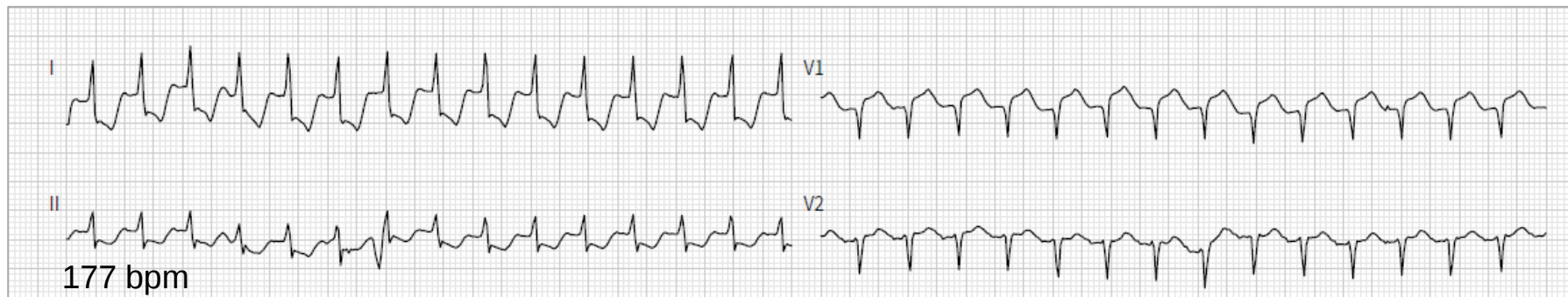


Beginn einer neuen Therapie

27.11.23



28.11.23



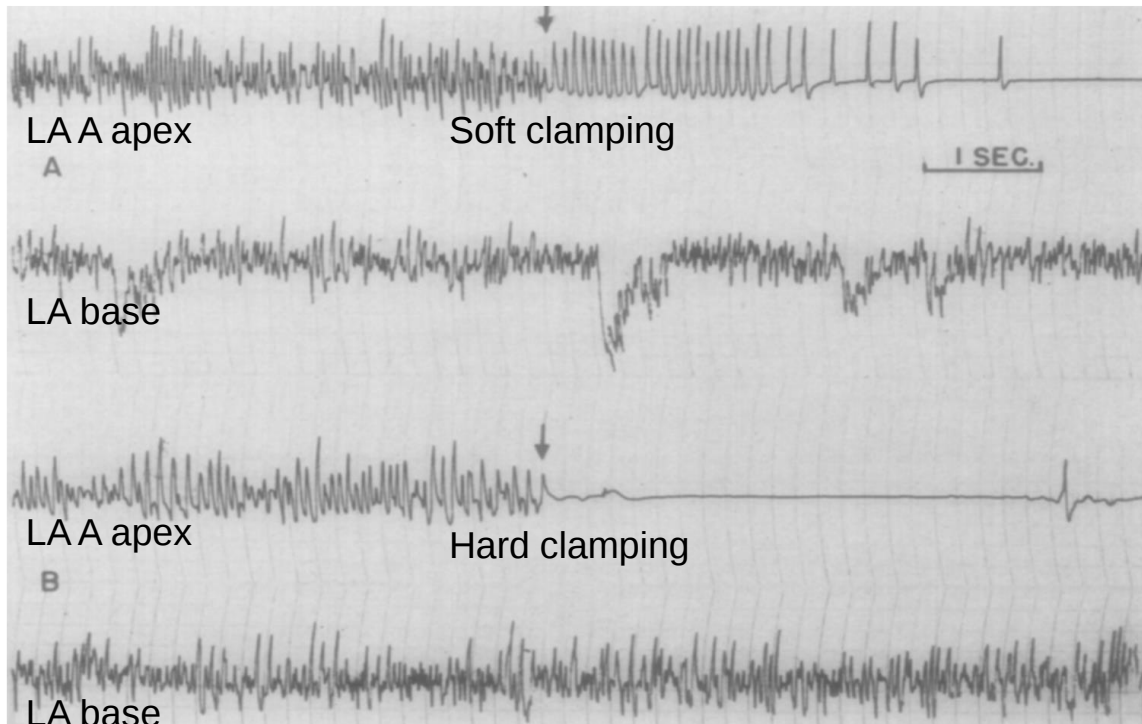


The New Millennium

Multiwavelet Theorie von Gordon K. Moe

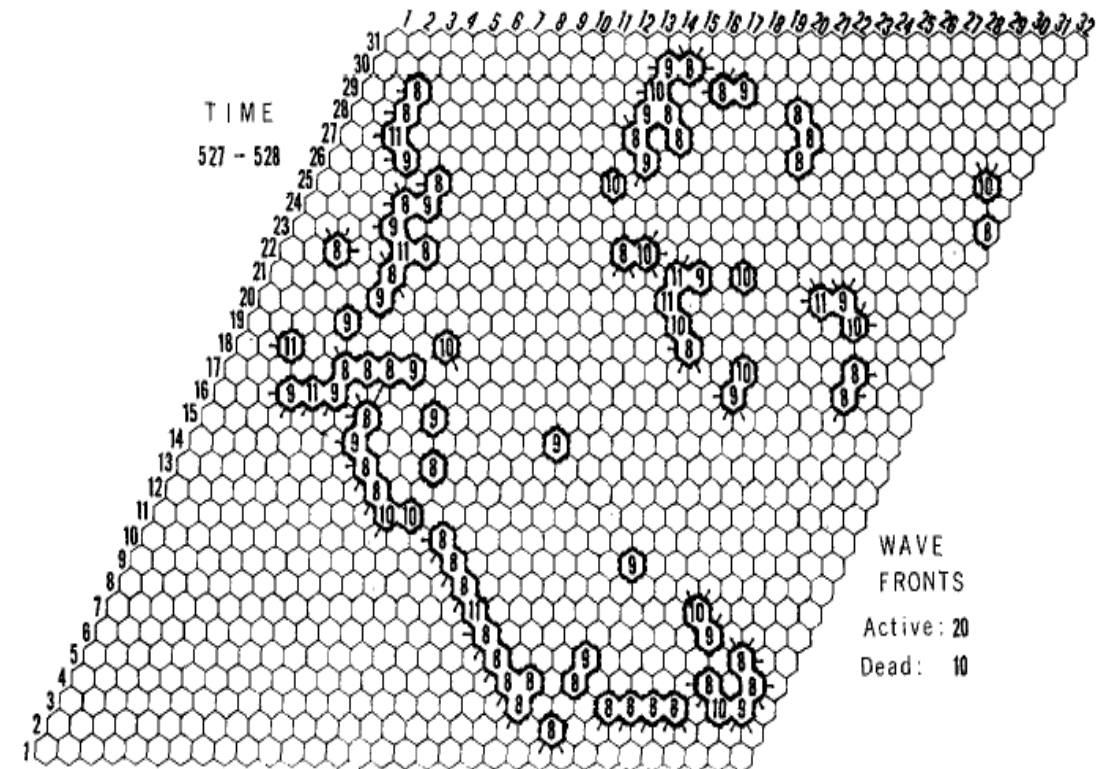


AF as self-sustaining arrhythmia



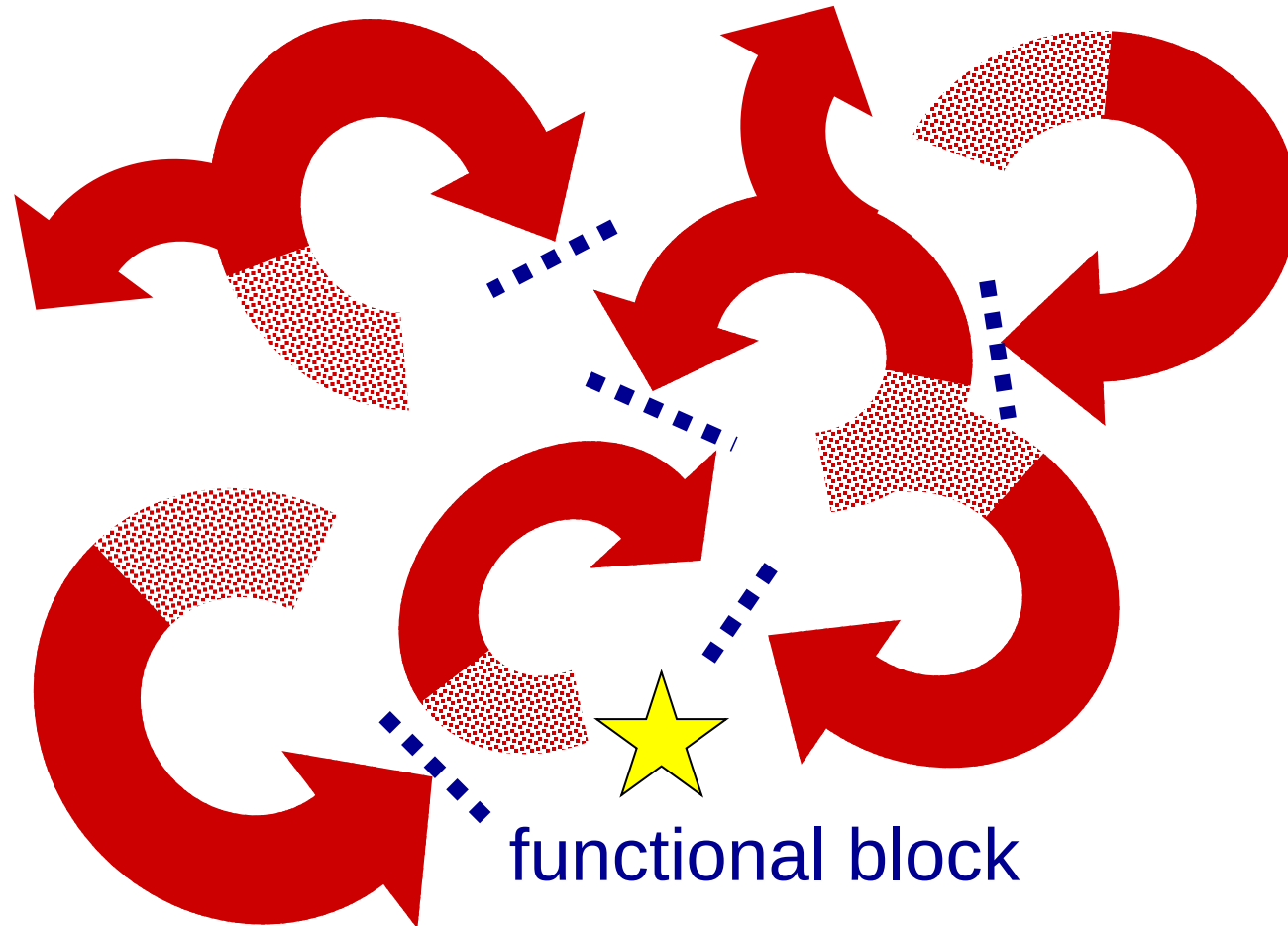
Moe G.K., Am Heart J 1959;58:59.

Computer model of AF (992 recording sites)

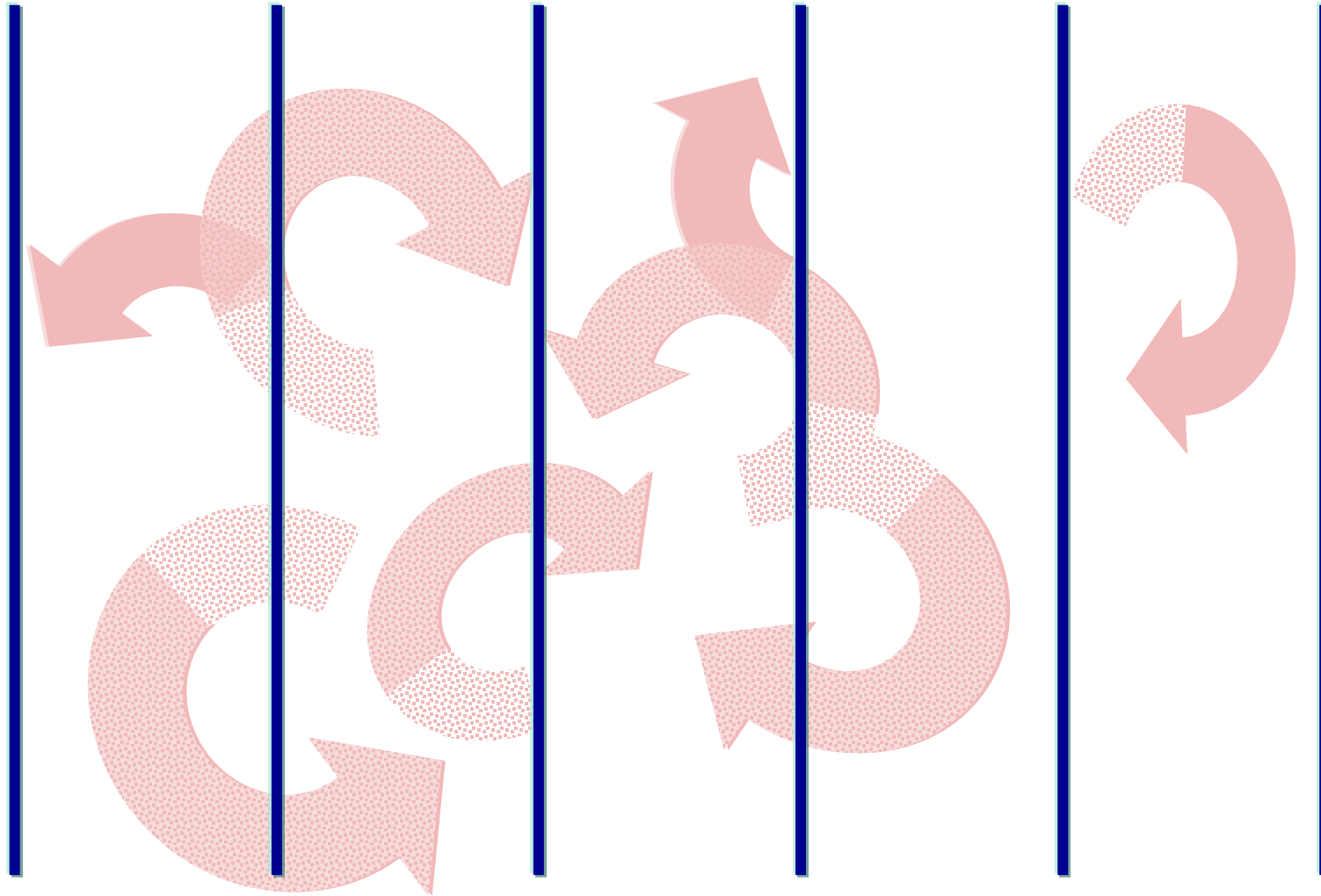


Moe G.K., Am Heart J 1964;67:200.

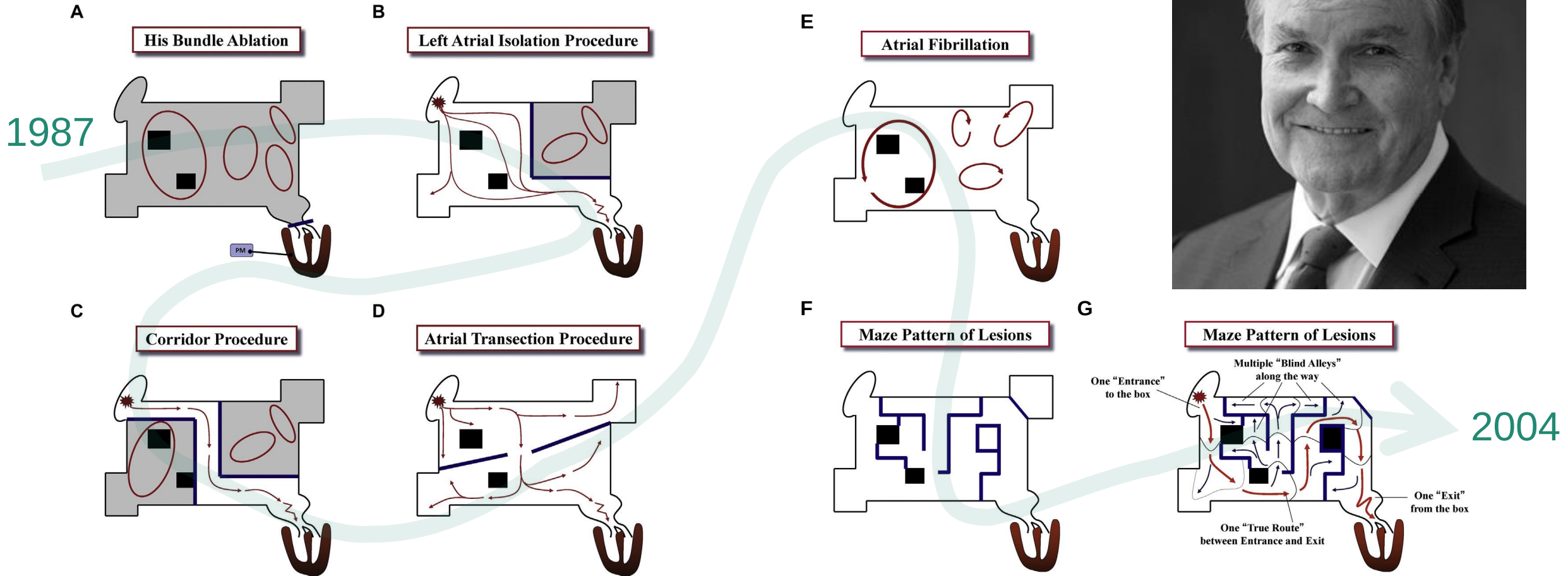
Multiple Wavlet Reentry



Strategie - Lineare Ablationen



The MAZE Procedure



Cox JL, Holman WL, Cain ME. Cryosurgical treatment of atrio-ventricular node reentry tachycardia. *Circulation* 1987;76:1329-36.

Cox JL. The surgical management of cardiac arrhythmias. *Cardiovasc Clin* 1987;17:381-413.

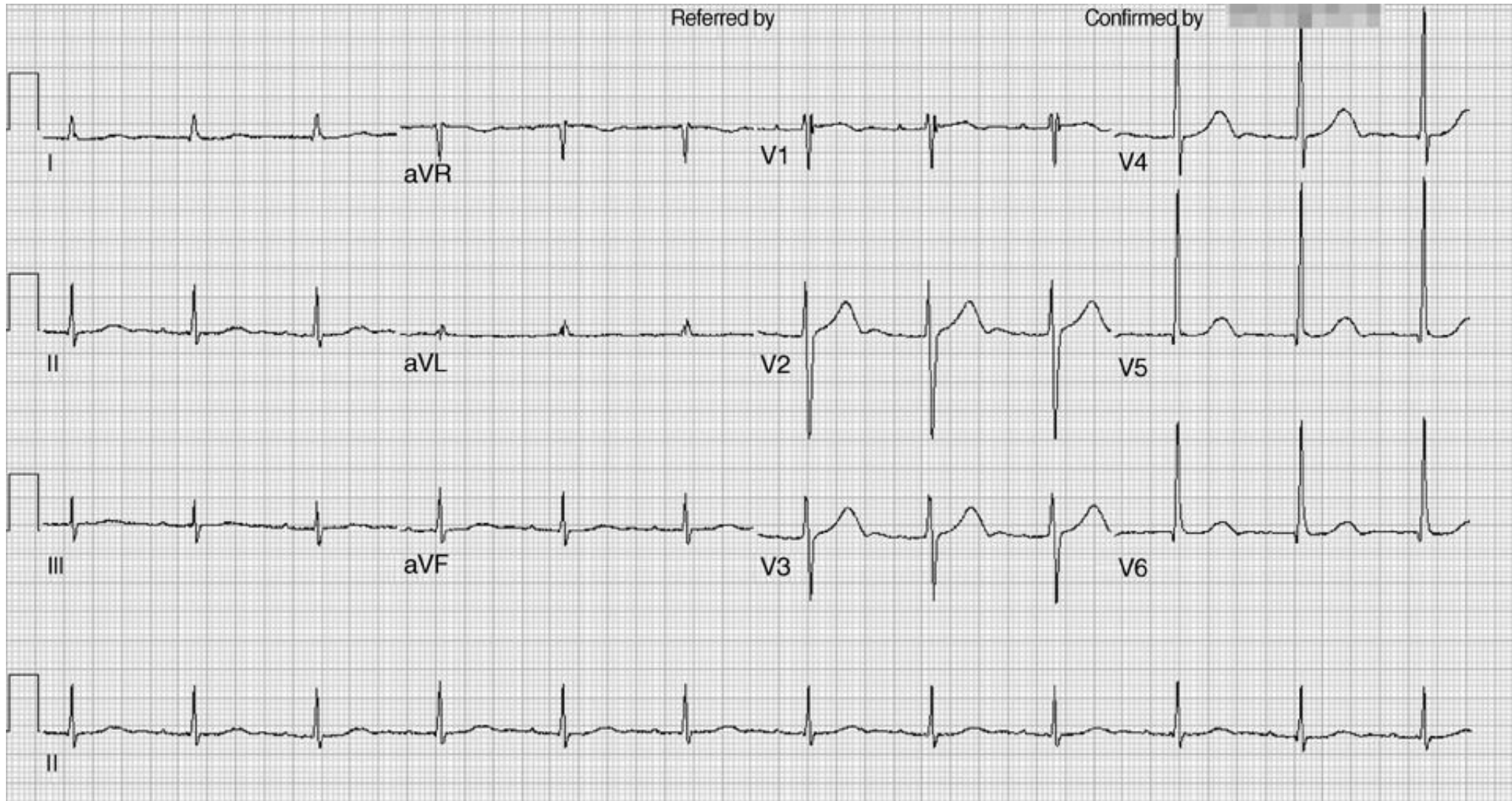
Cox JL, Schuessler RB, D'Agostino HJ Jr, et al. The surgical treatment of atrial fibrillation: III. Development of a definitive surgical procedure. *J Thorac Cardiovasc Surg* 1991;101:569-83.

Cox JL. The surgical treatment of atrial fibrillation: IV. Surgical technique. *J Thorac Cardiovasc Surg* 1991;101:584-92.

Cox JL. Atrial fibrillation II: Rationale for surgical treatment. *J Thorac Cardiovasc Surg* 2003;126:1693-9.

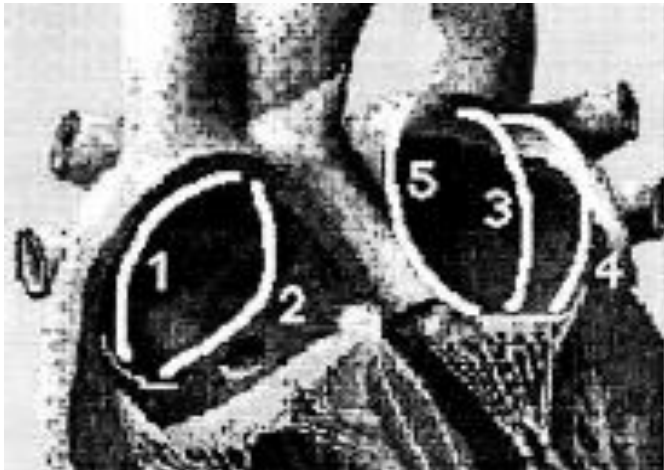
Ad N, Cox JL. The Maze procedure for the treatment of atrial fibrillation: a minimally invasive approach. *J Card Surg* 2004;19:196-200.

‘Sinusrhythm’ after MAZE Procedure

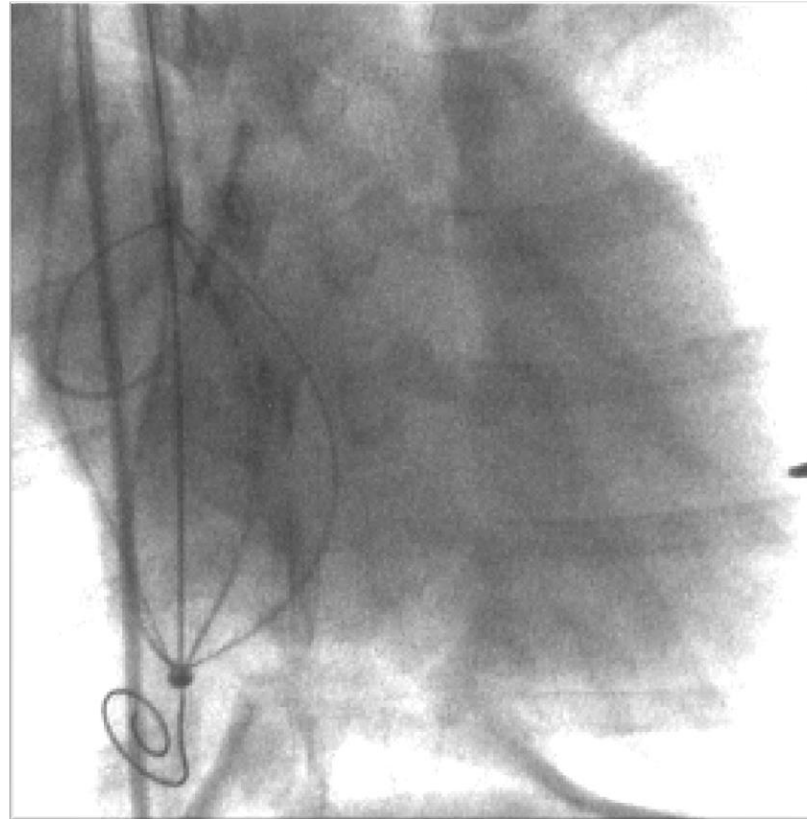


High-density Mapping and Linear Ablation of AF

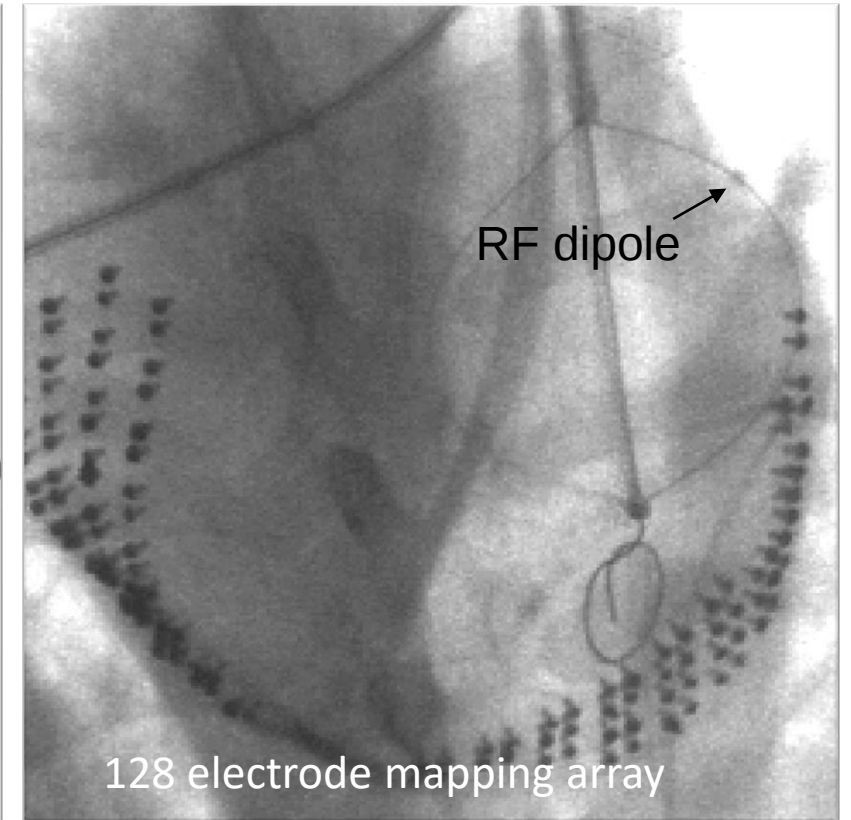
ATLAS™ Katheter



Basket in RA-Position



Basket in LA-Position

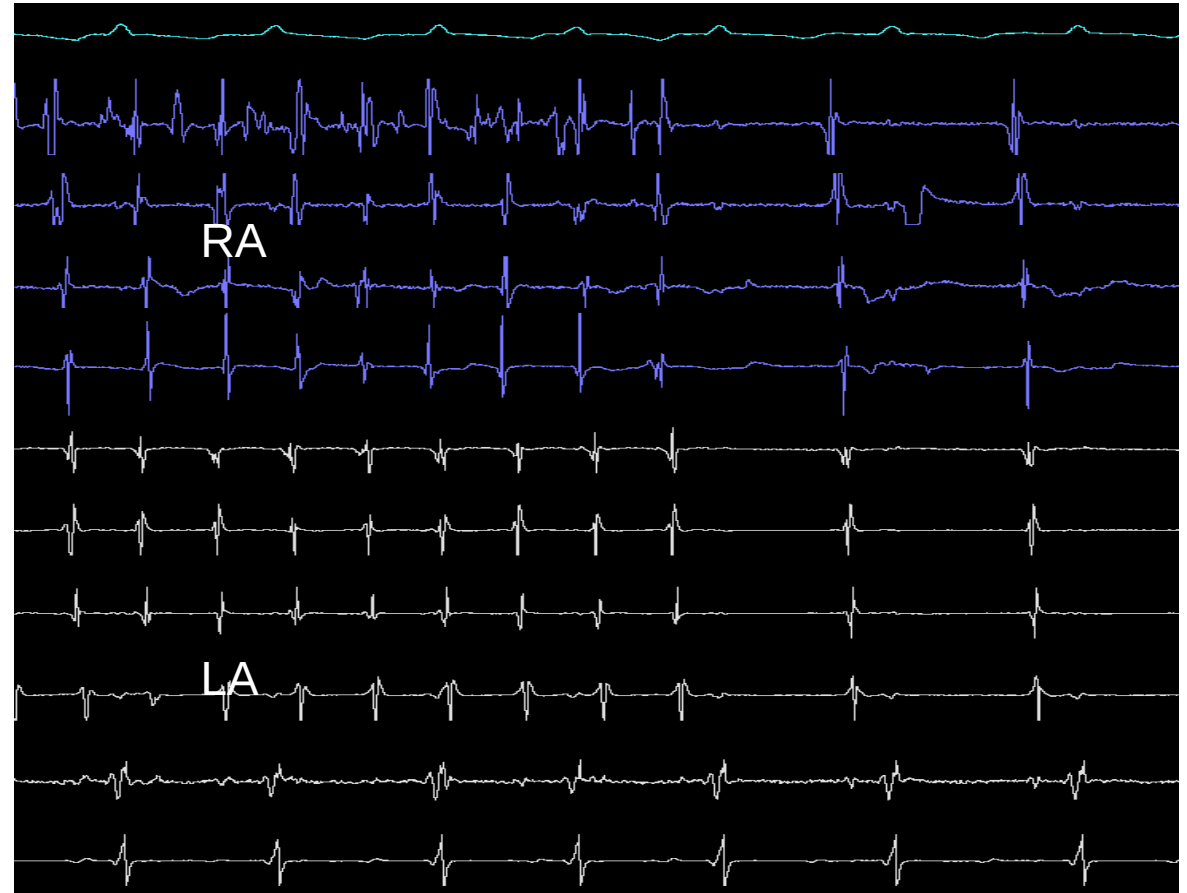


Organization and Termination of AF by Linear Lesions

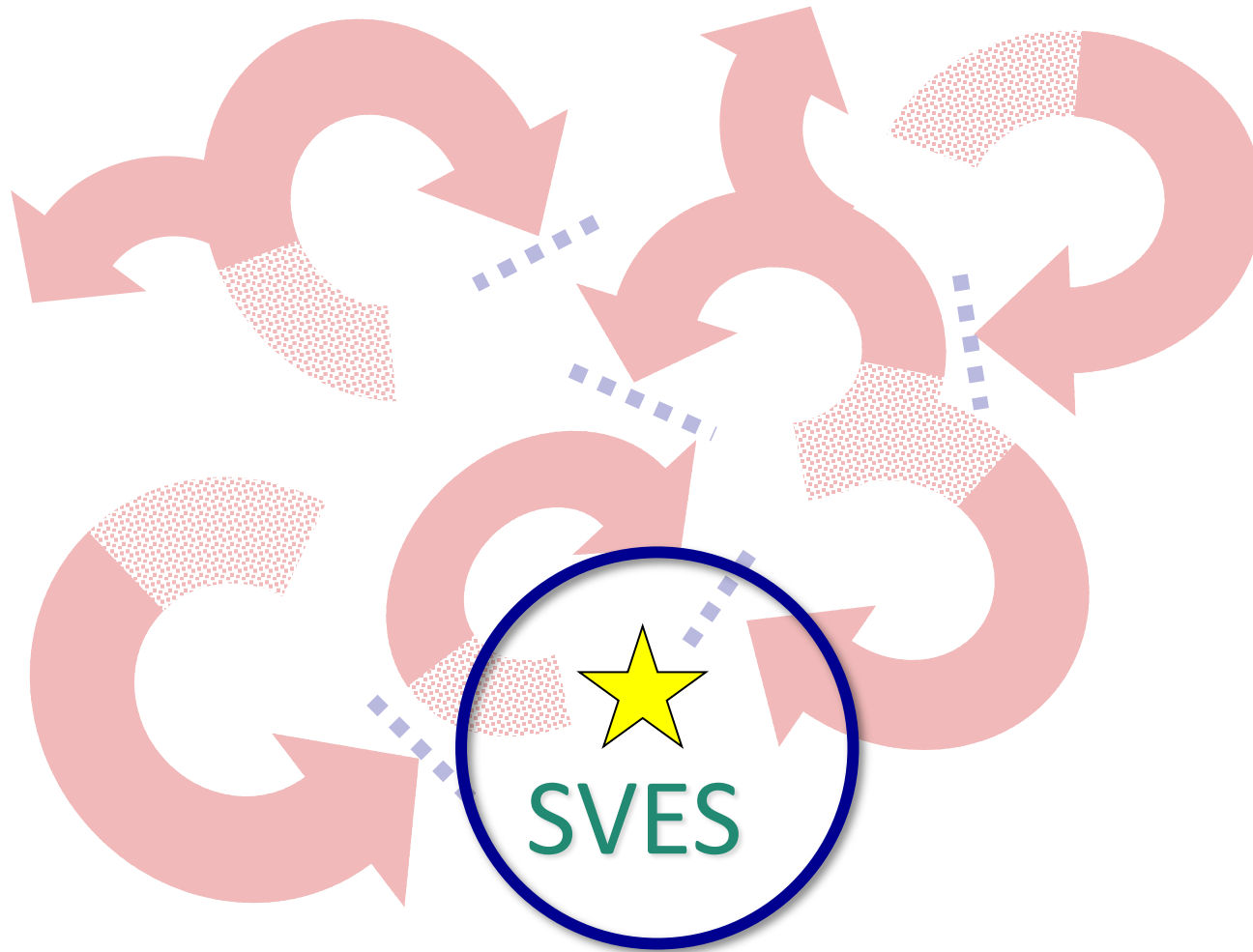
after 2 LA lines



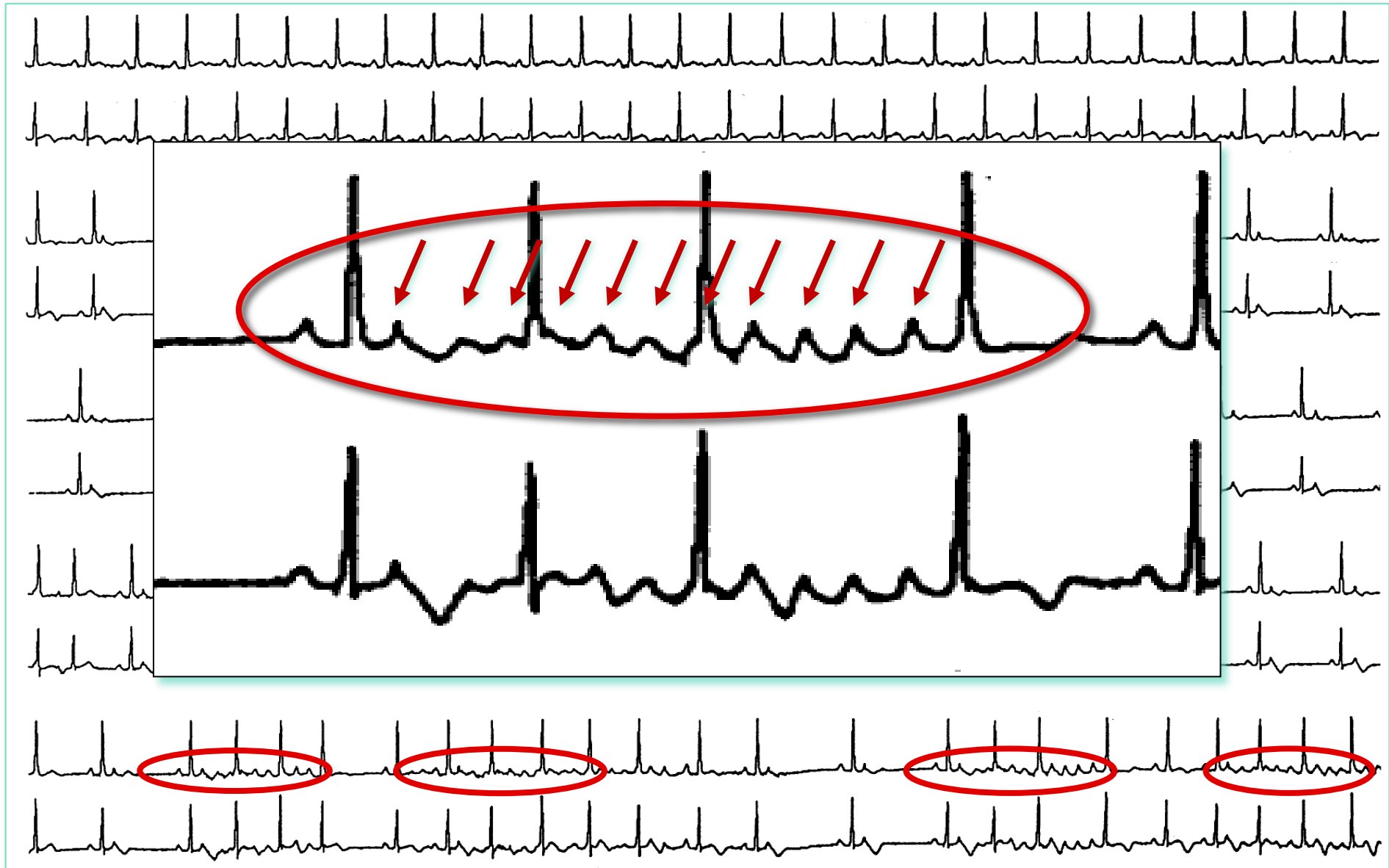
after 4 LA lines



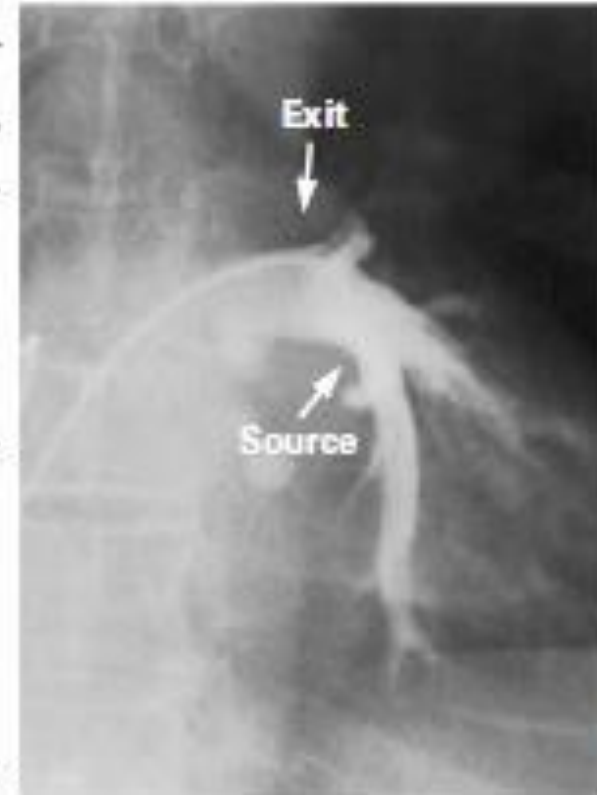
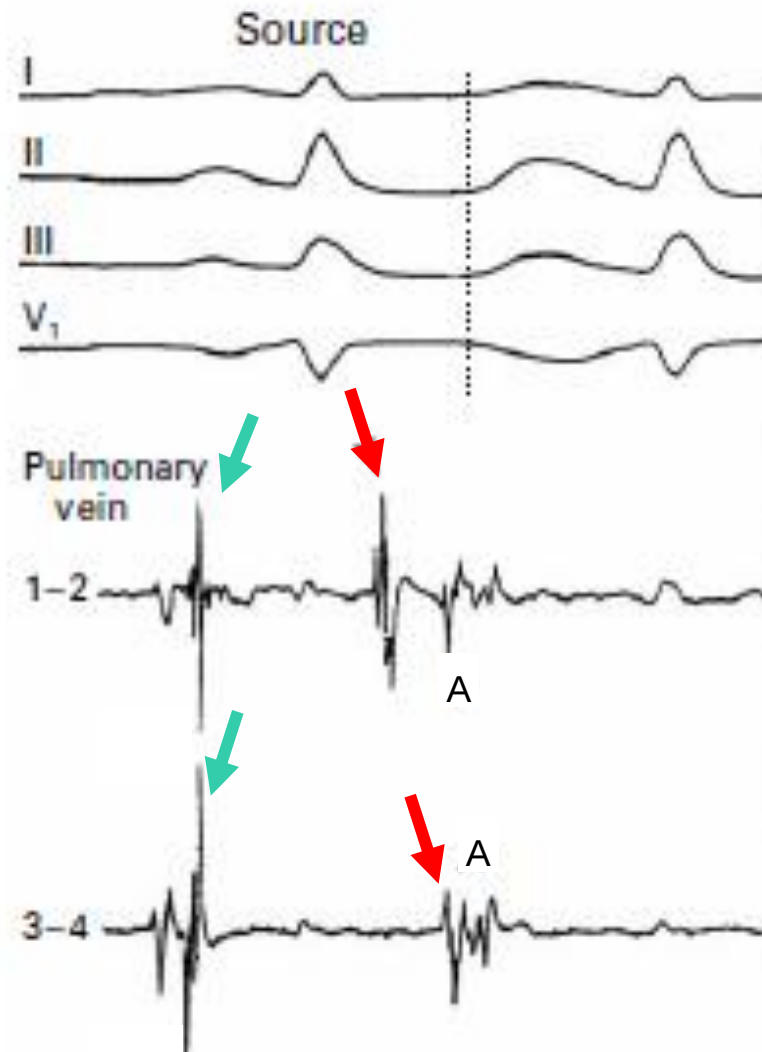
Strategie - Fokus Isolation



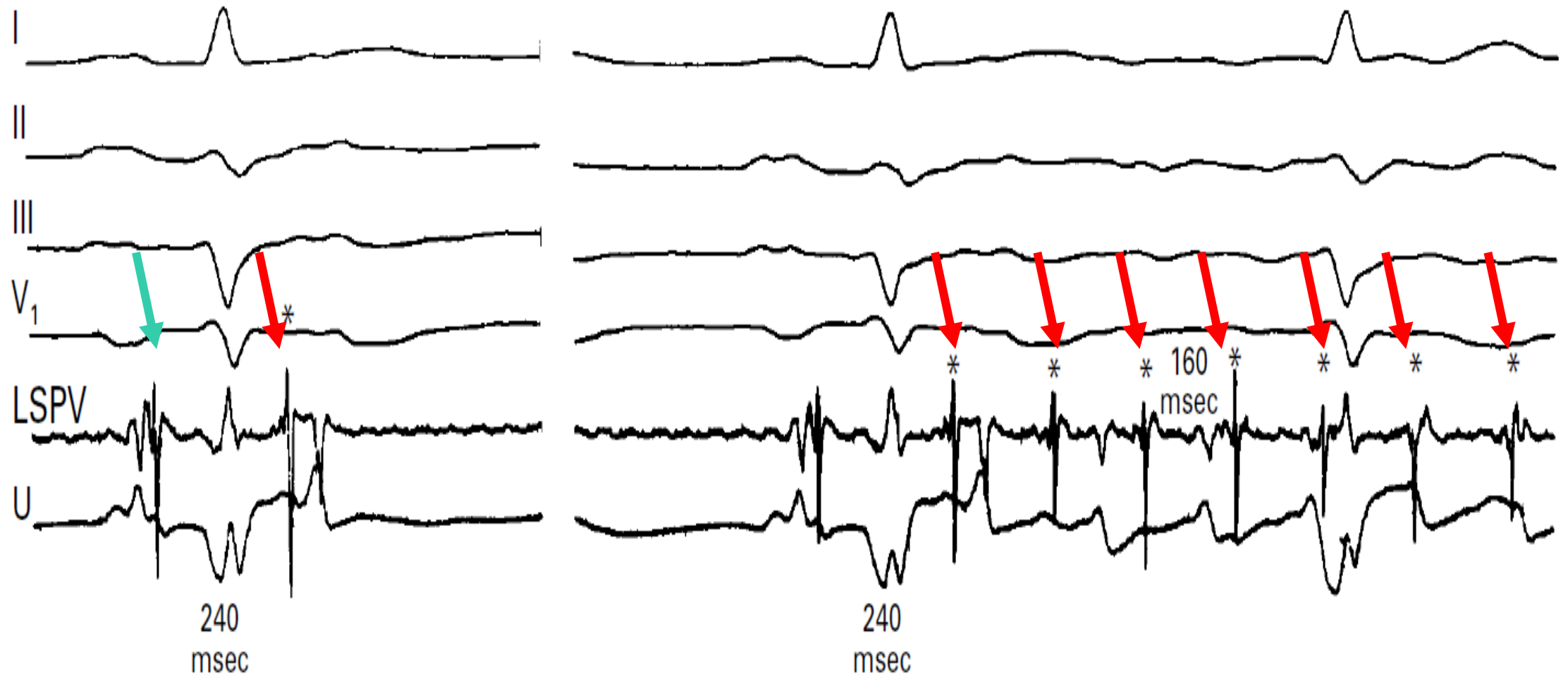
Atrial Burst Activity as AF-Trigger



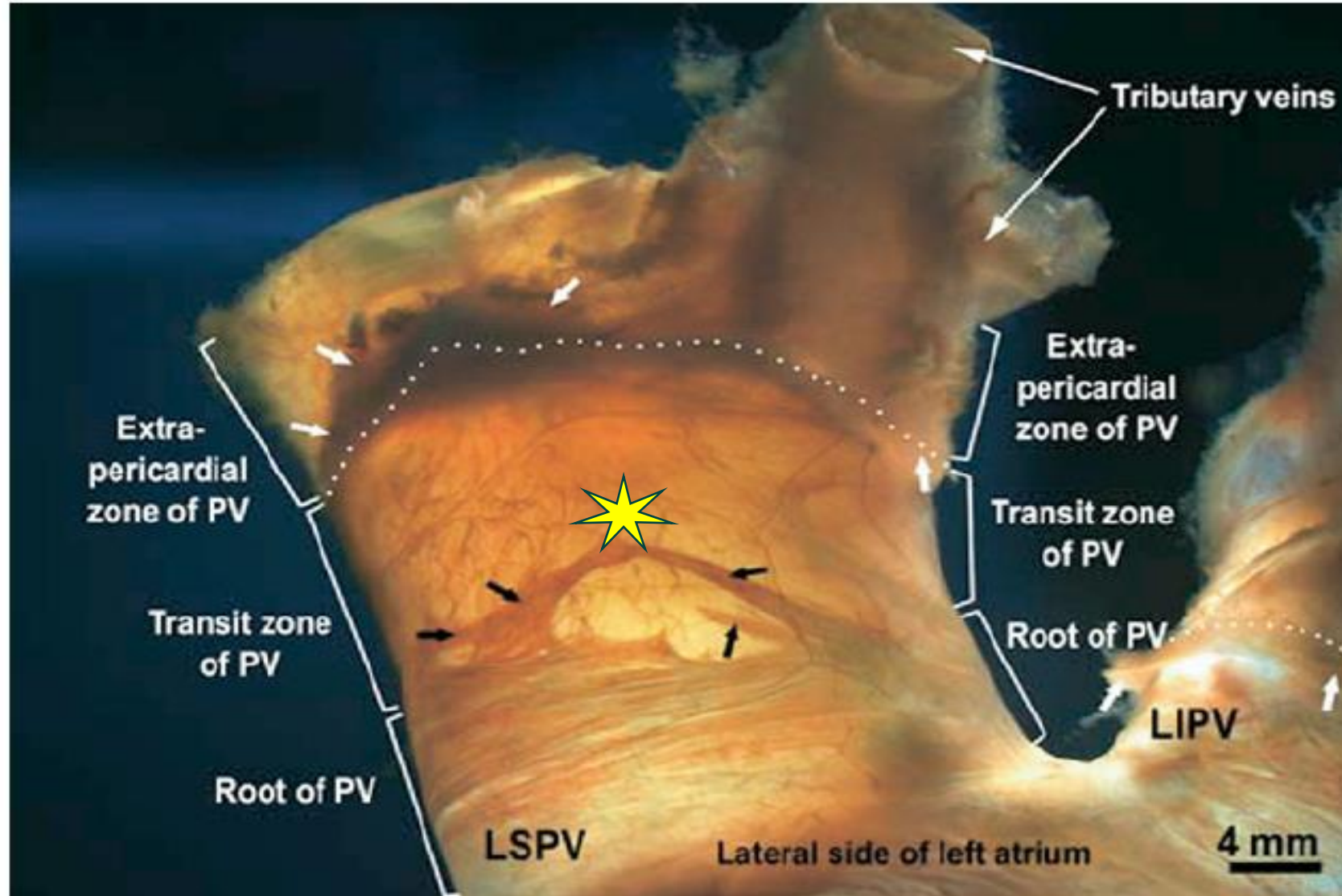
Spontaneous Initiation of Atrial Fibrillation by Ectopic Beats Originating in the Pulmonary Veins



Spontaneous Initiation of Atrial Fibrillation by Ectopic Beats Originating in the Pulmonary Veins

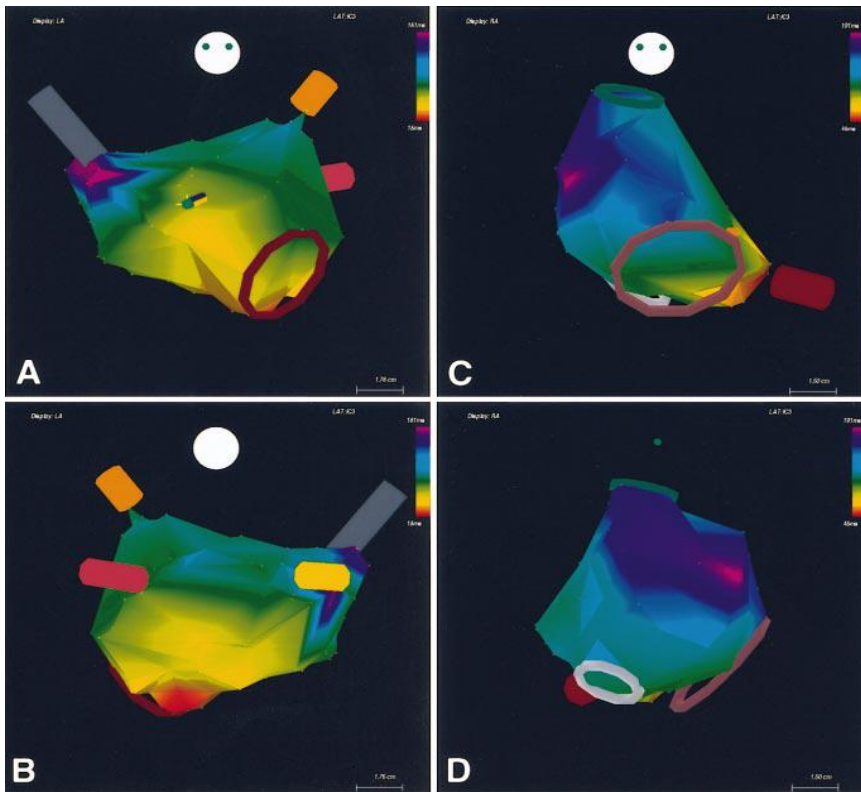


Pulmonalvenen Anatomie



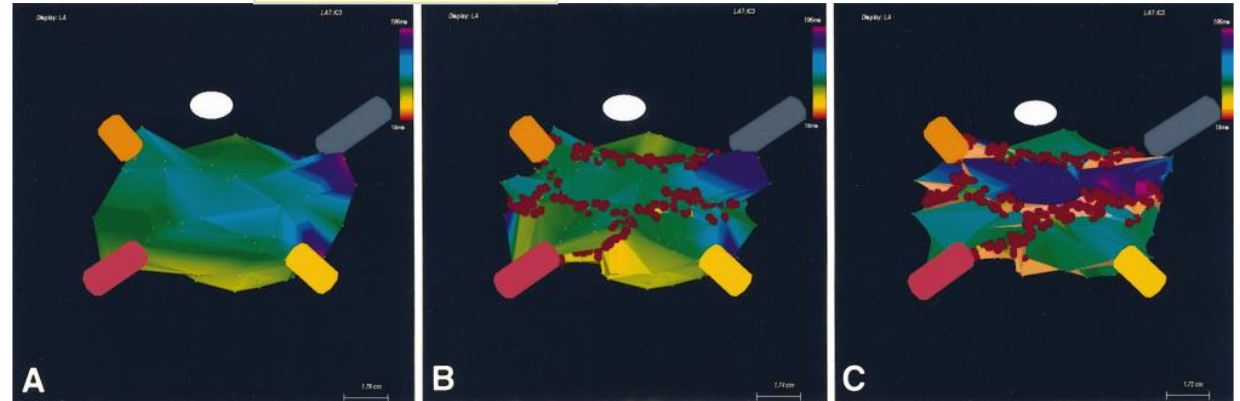
Catheter Ablation of PAF Using a 3D Mapping System

Extensive mapping before & after ablation

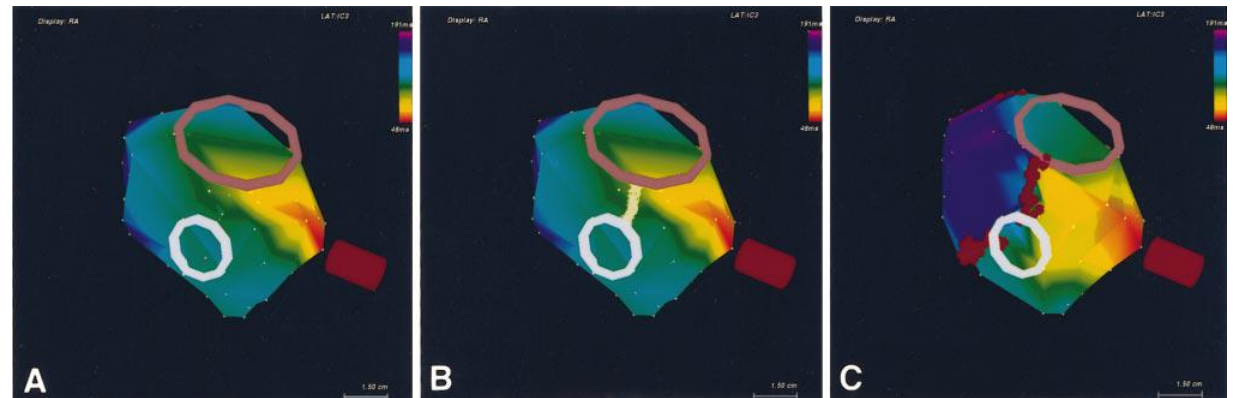


Procedure time: 312 ± 103 min
Fluoroscopy time: 107 ± 44 min
Success rate: 60% @ 11 ± 3 mts

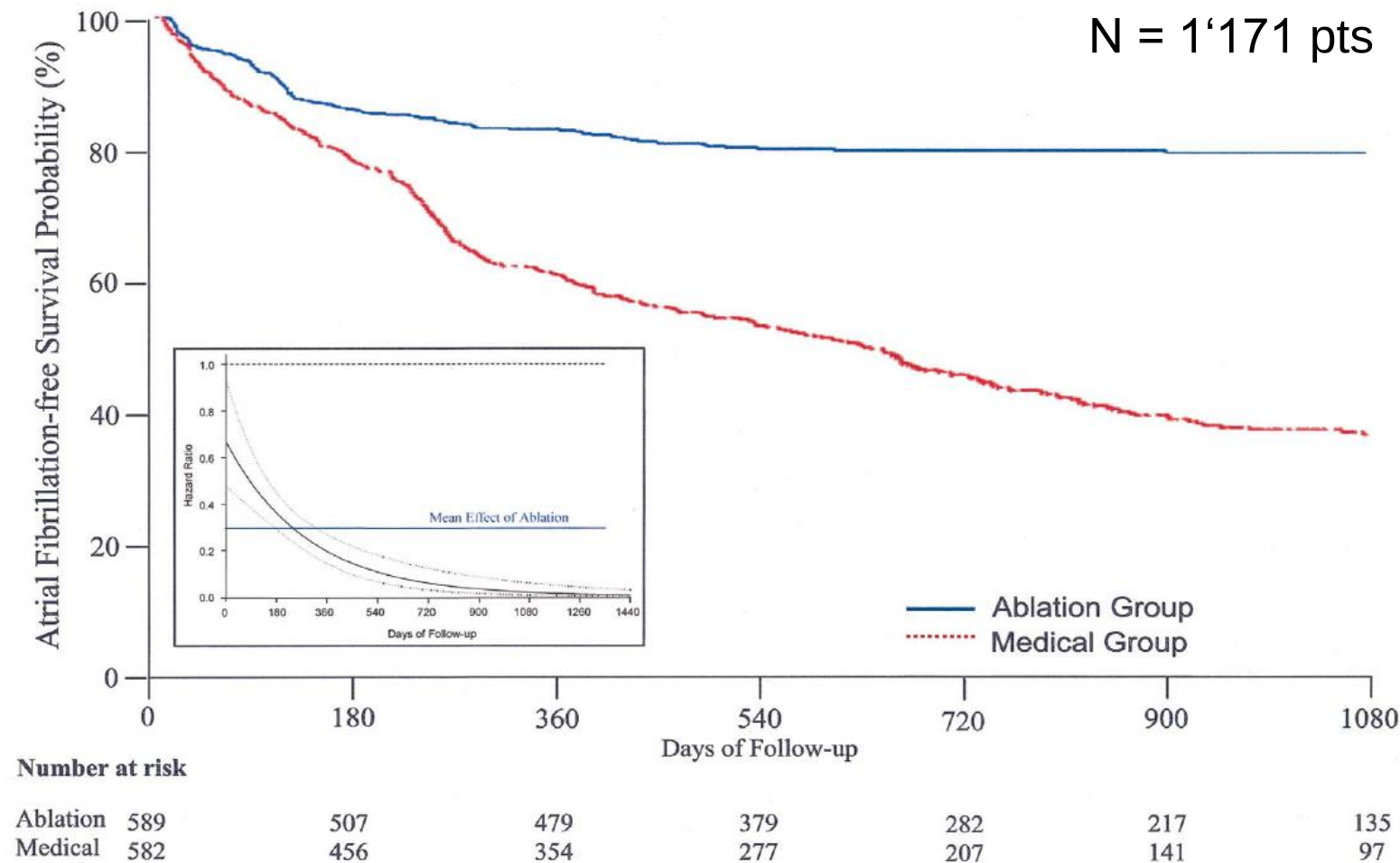
LA 3 lines: PV encircling, lateral and septal mitral line



RA 3 lines: intercaval, interseptal and isthmus line



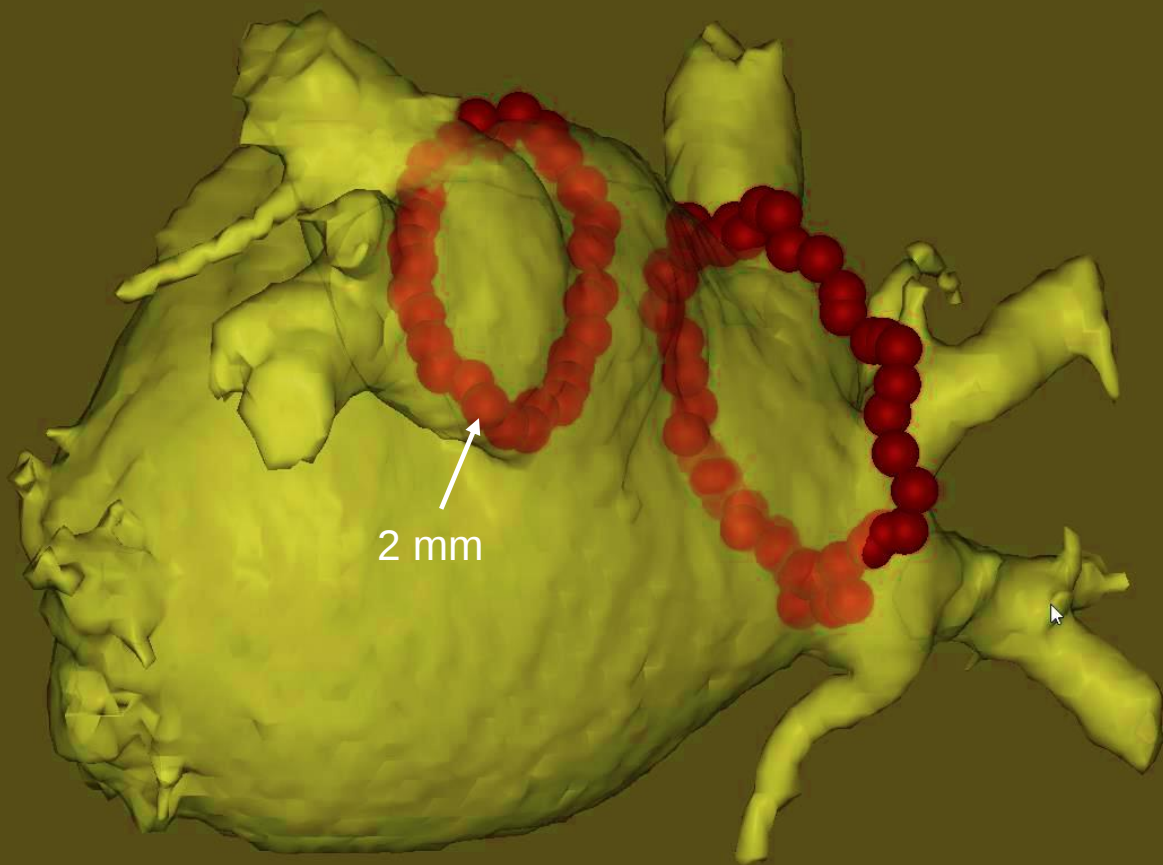
Mortality, Morbidity, and QoL After Circumferential Pulmonary Vein Ablation for Atrial Fibrillation



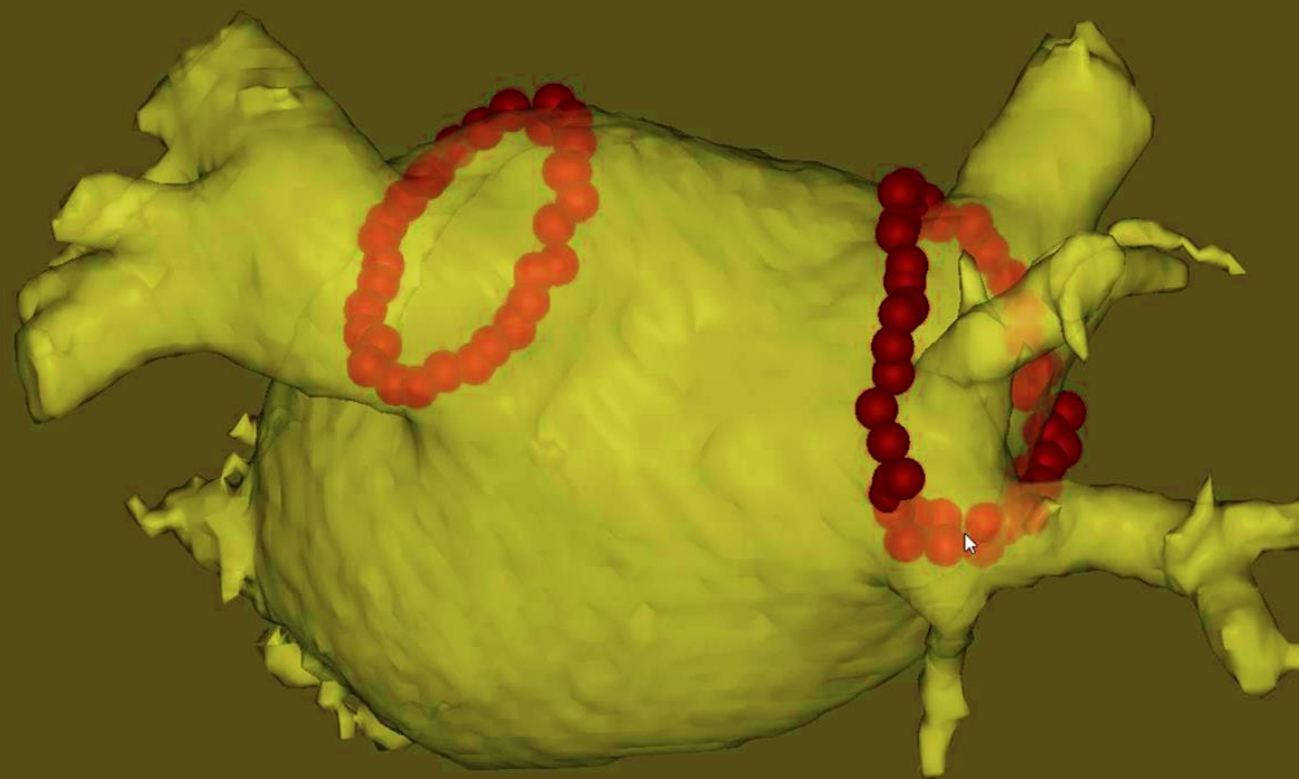
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State-of-the-art 2024 - PVI with RFA & Carto 3

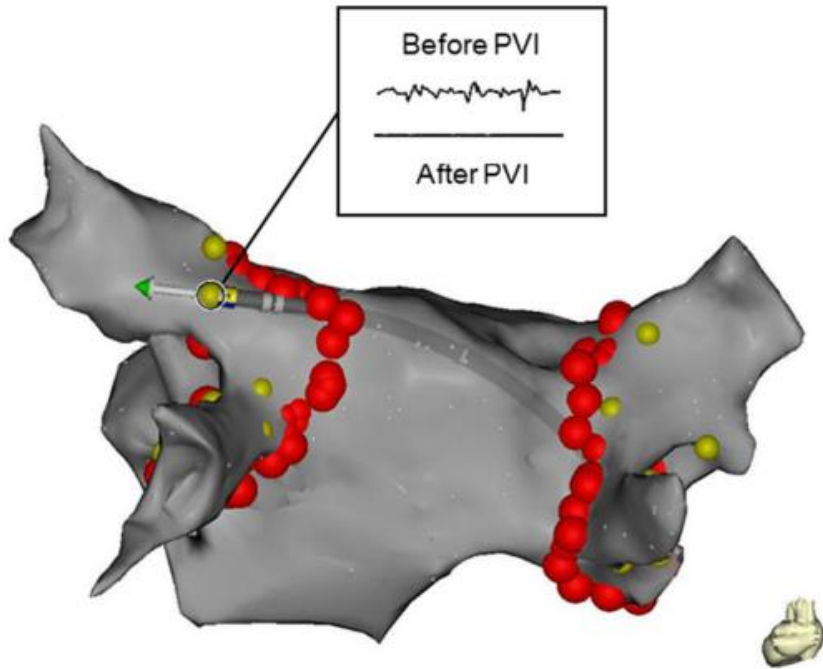


LPO view



PA view

New tools, more power, better results ?



Hot

Badertscher P et al, JICE 2022



Cold

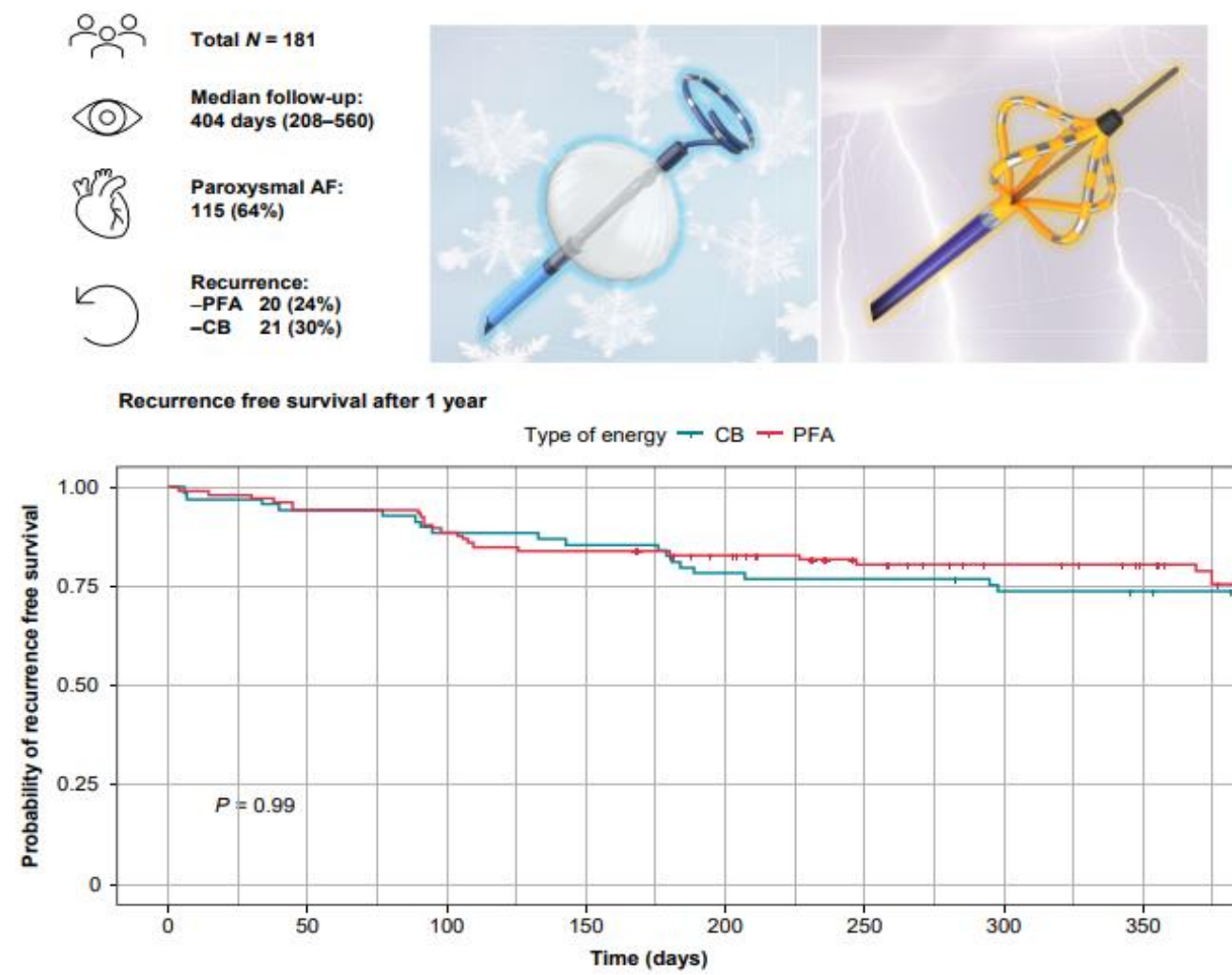
Kuck KH et al, N Engl J Med 2016



Non-thermal

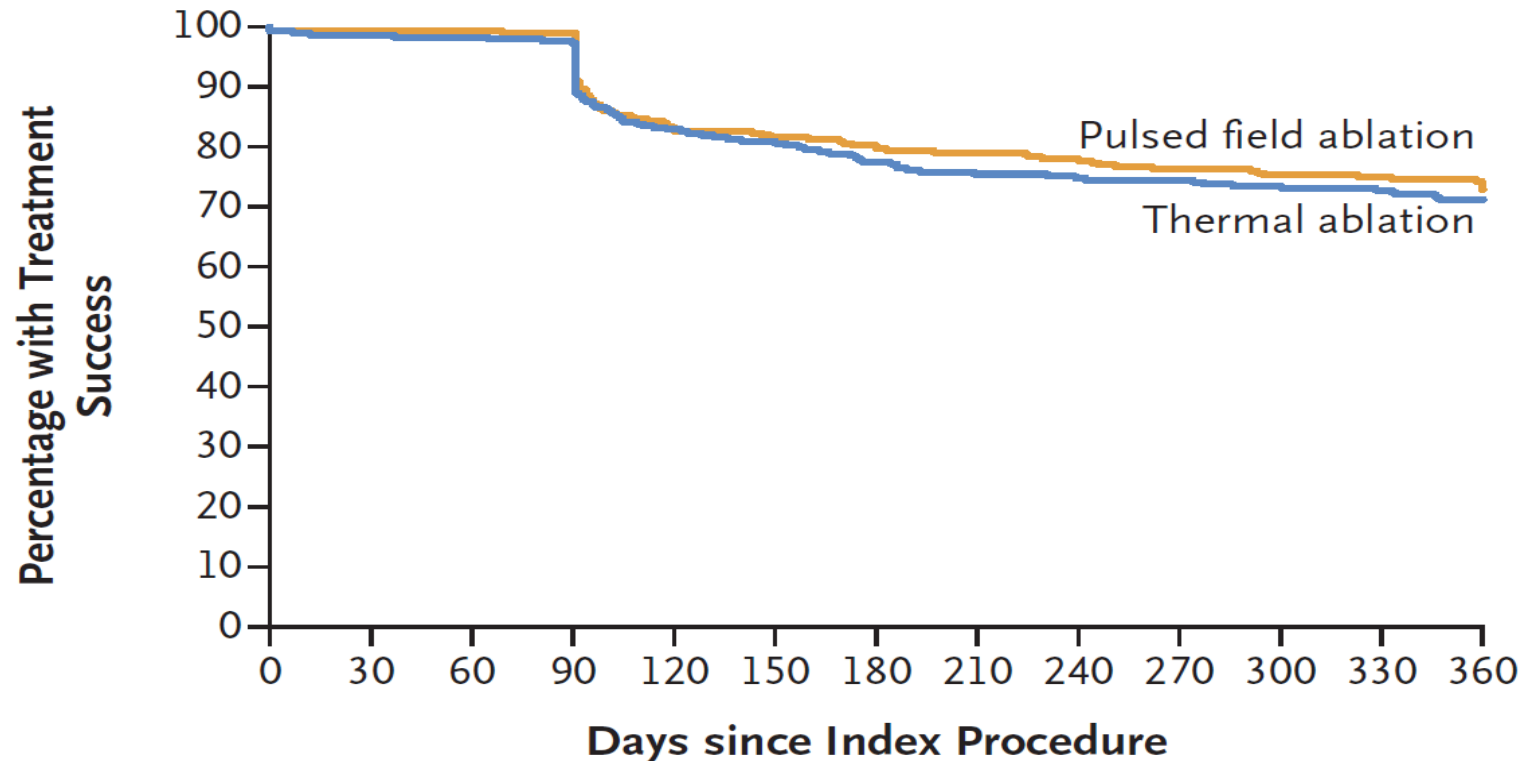
Badertscher P et al, Heart Rhythm 2023

New Techniques - Cryoballoon vs. Pulsed Field Ablation



	CB, N = 75	PFA, N = 106
Total procedure duration	58 (48–69)	55 (43–64)
LA dwell time, min	37 (31–48)	38 (30–49)
Fluoroscopy time, min	11 (8.7–16)	11 (9.3–14)
Hs-cTnT 1 day after PVI	989 (745–1380)	1520 (996–1940)
Number of applications	5 (4–7)	32 (32–34)
First pass isolation	42 (56%)	88 (83%)

ADVENT Trial – PFA vs. Thermal Ablation



Treatment Success (%)

Pulsed field ablation	99.3	99.0	79.7	76.4	73.1
Thermal ablation	98.7	97.3	77.5	74.5	71.3

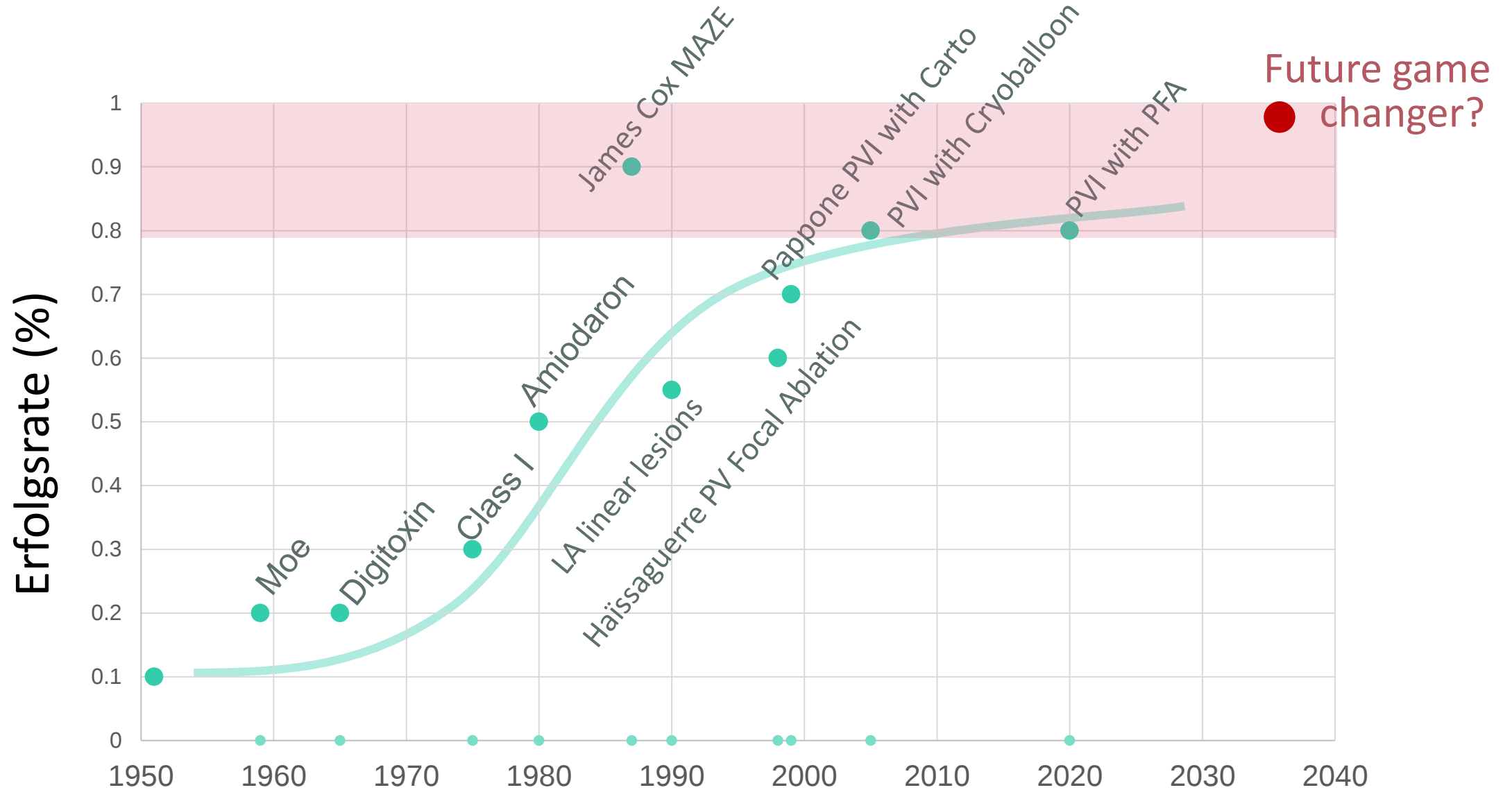


Pulsed Field Ablation
(N=305)



Thermal Ablation
(N=302)

Meilensteine in der VHF Therapie

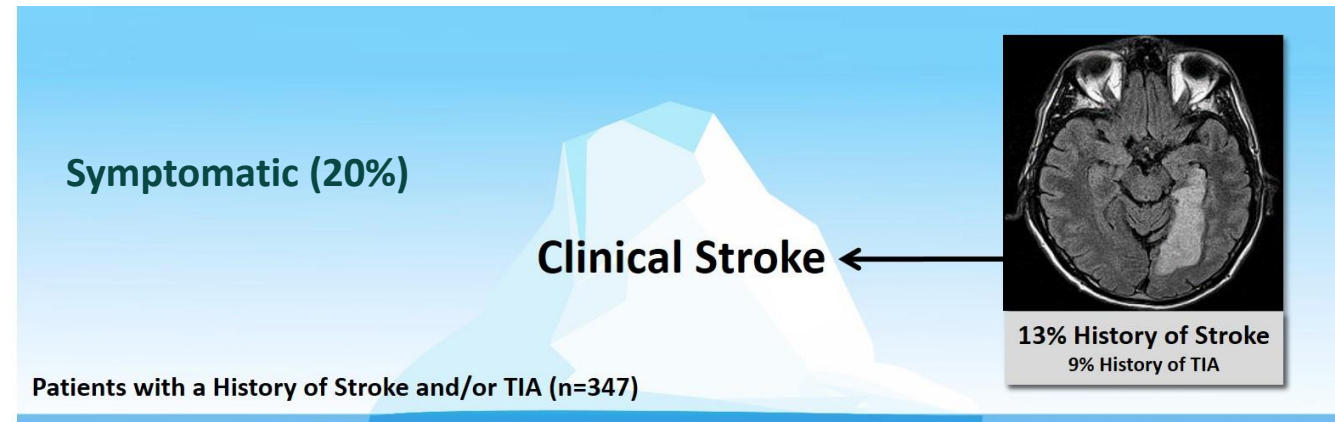


Agenda

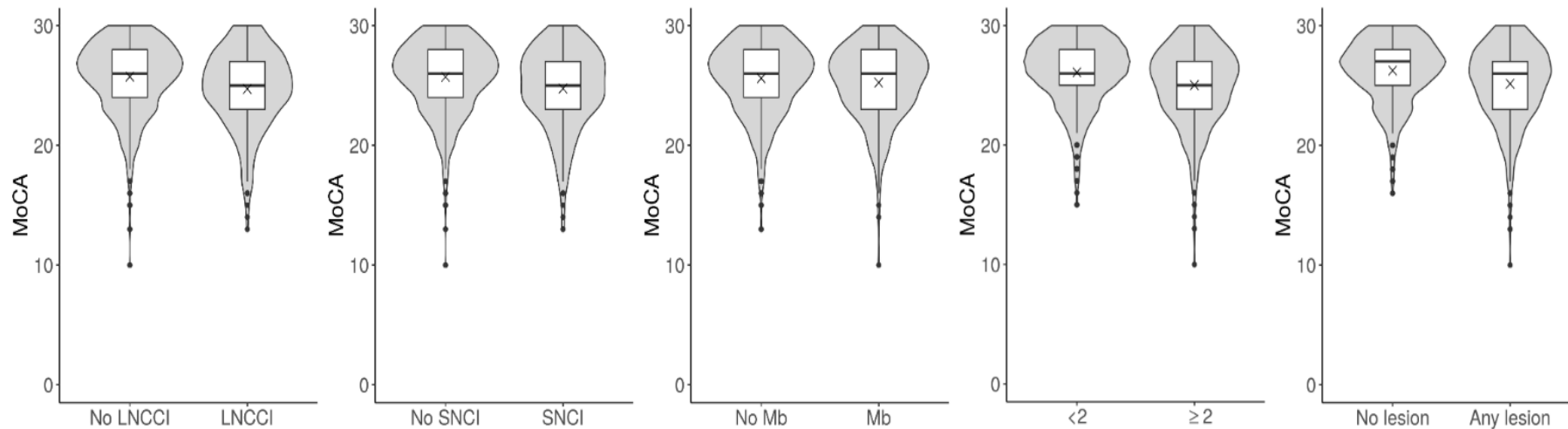
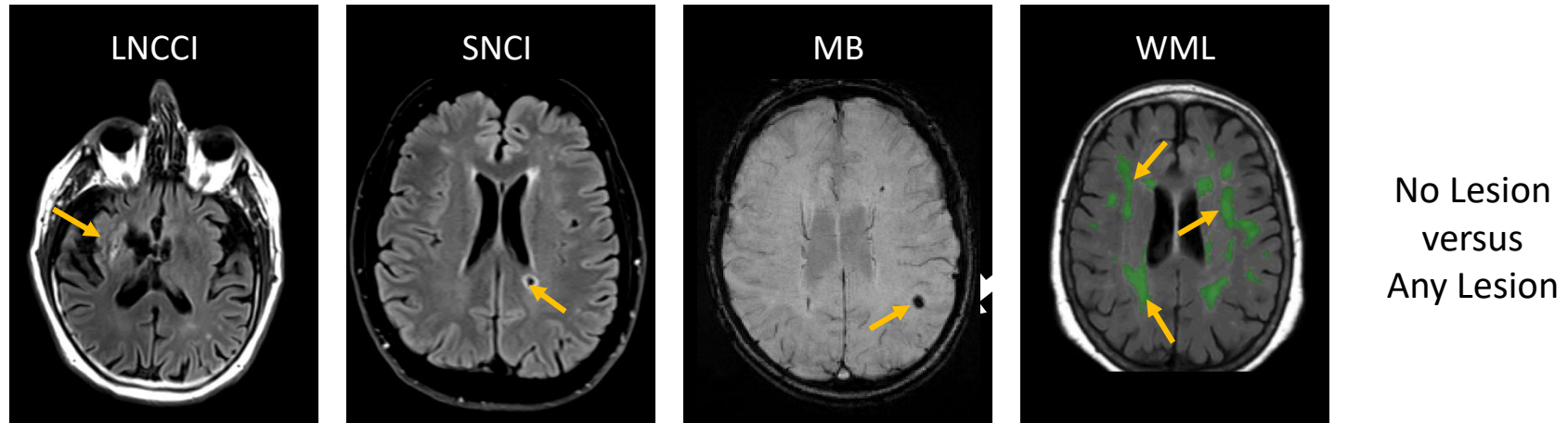
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SwissAF 2014

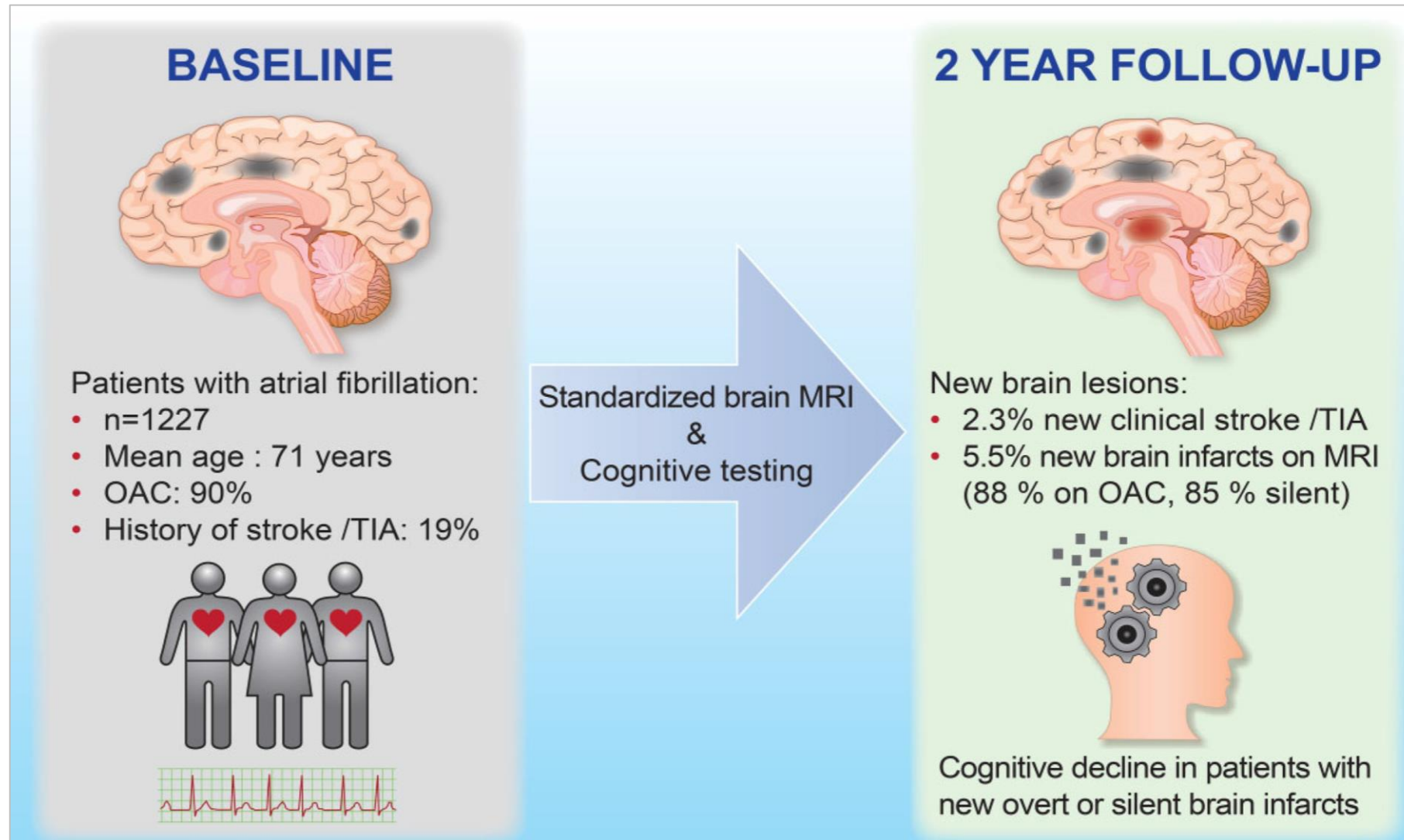
Hypothesis



Effect of lesion type on cognitive function (Baseline)



Silent brain infarcts impact on cognitive function in AF



SwissAF 2024

AF vs. Control

AF patients



N=1732

Age: 73 ± 8
Female sex: 475 (27.4%)
CHA₂DS₂-VASc: 3.22
OAC: 1560 (90.1%)
MoCA: 25.5

Control

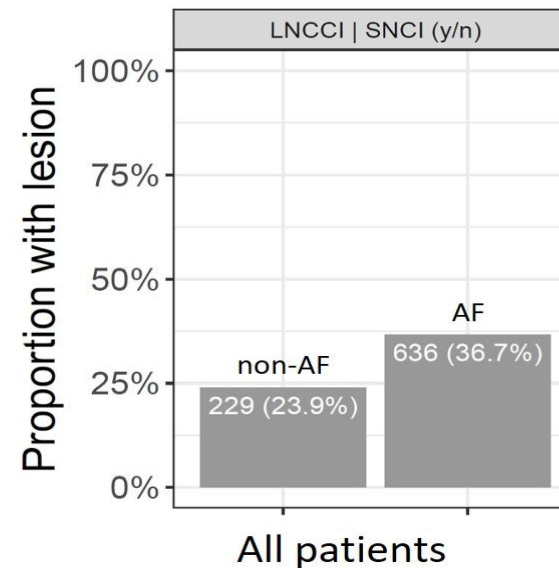


N=963

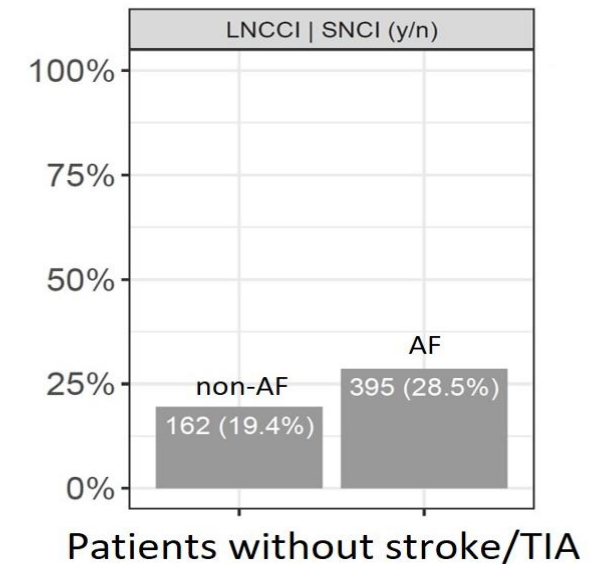
74 ± 6
355 (36.9%)
3.47
86 (8.9%)
26.4

Prevalence of brain lesions

Any brain infarcts

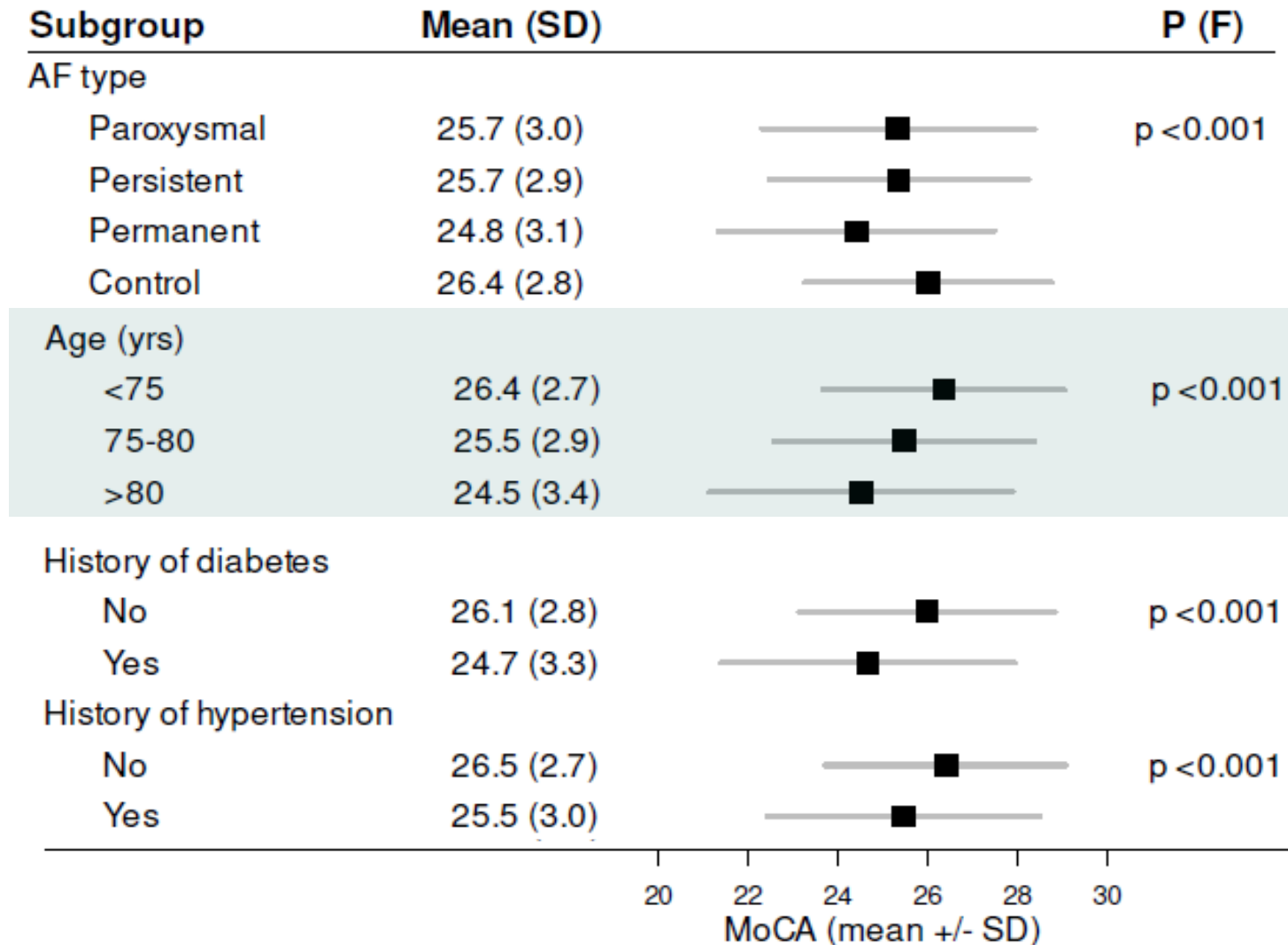


Clinically silent infarcts

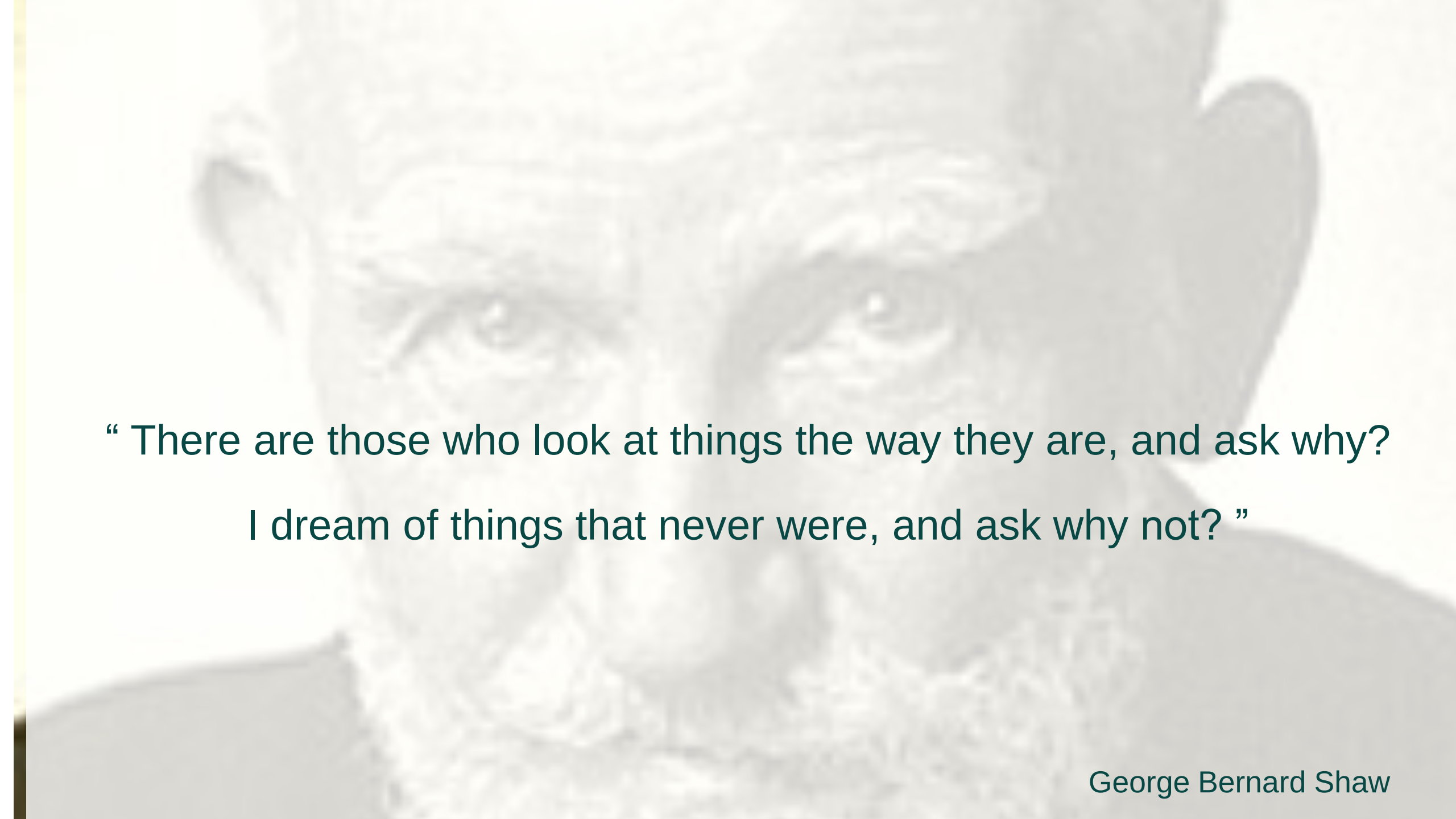


unpublished data

SwissAF 2024 - Loss in cognitive function (N=2'695)



unpublished data



“ There are those who look at things the way they are, and ask why?
I dream of things that never were, and ask why not? ”

George Bernard Shaw

