



DEUTSCHES HERZZENTRUM  
DER CHARITÉ



# AVN-Ablation/Afib Treatment

BIOTRONIK CSP Summit Berlin

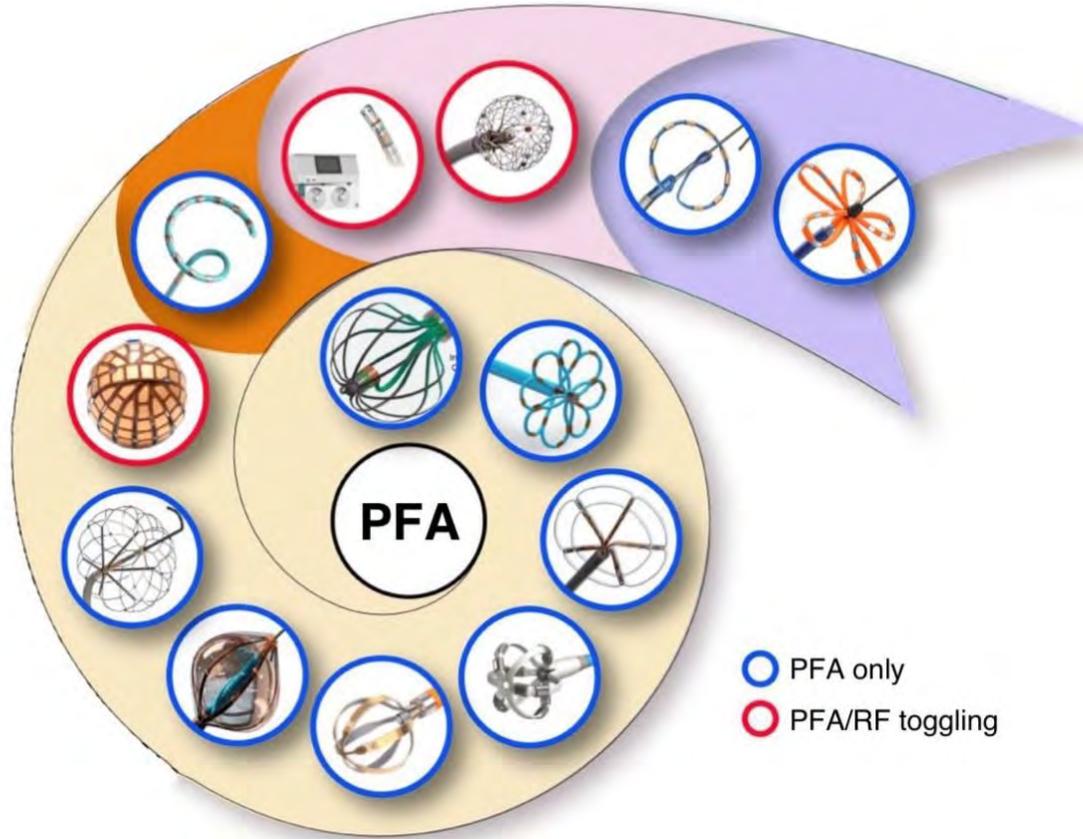
PD Dr.med. Verena Tscholl



## Conflicts of Interest

- 1) Lecture fees : Biosense Webster, Novartis, Biotronik, Medtronic, Astra Zeneca, Pfizer
- 2) Advisory Board Activities: Medtronic
- 3) Participation in clinical studies : Medtronic, Biotronik
- 4) Research support: Medtronic, Boston Scientific

# New Technologies in Atrial Fibrillation Treatment

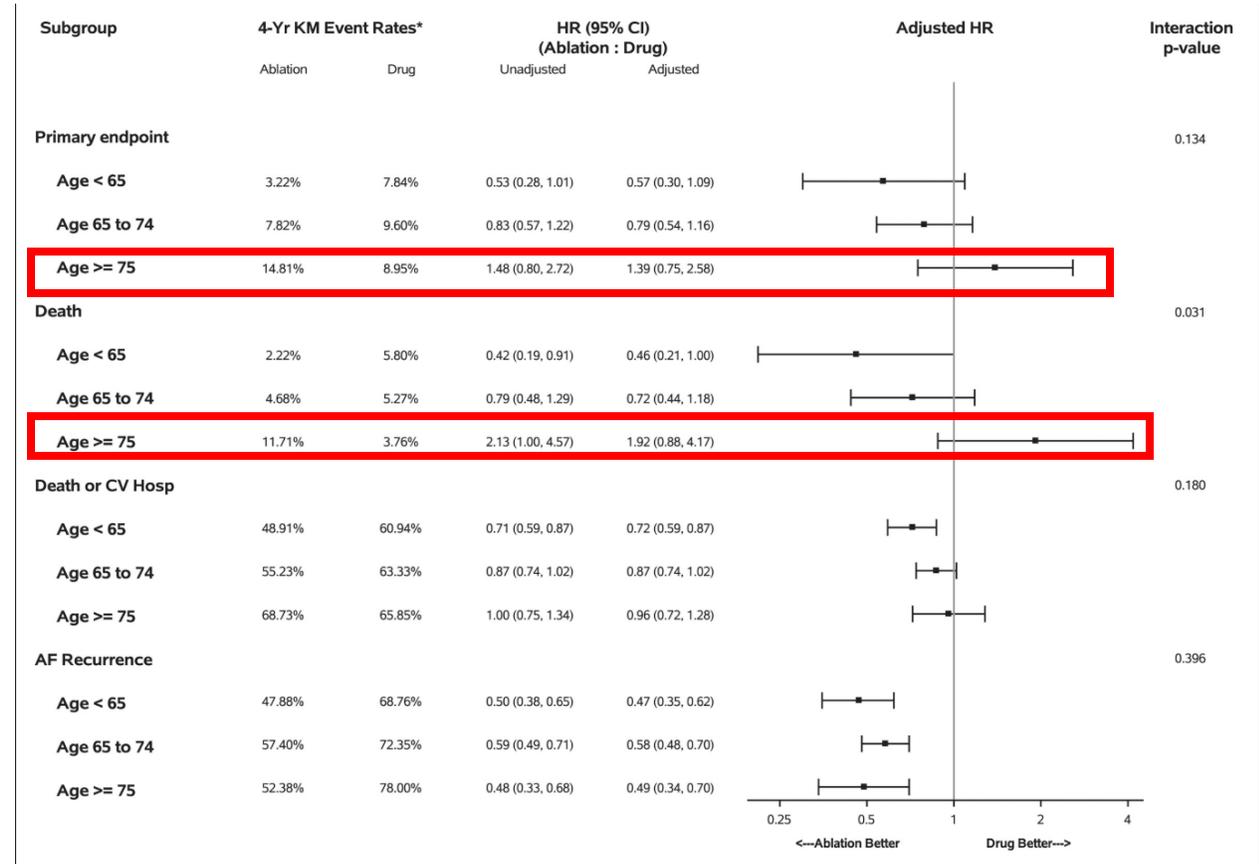


- Why should we need rate control?
- Why should we perform AVN-Ablation?
- Why should we pick CSP?
- Which type of CSP would fit best?
- How many leads should we take?

# Rate vs Rhythm Control

Long-term success of rhythm control via ablation in persistent AF dependent on:

- Age
- CAD
- CKD
- atrial dimensions
- BMI
- .....?



# Rhythm Control in elderly patients

- Mixed results regarding success of catheter ablation in elderly patients
- AAD often difficult due to concomittant CS-Disease

Antiarrhythmic drug therapy is not recommended in patients with advanced conduction disturbances unless antibradycardia pacing is provided.

III

C

**Table 2. Overview of recent studies on efficacy of catheter ablation in elderly patients**

Study and AF phenotype	Patients, young/elderly	Definition of elderly	Design	Follow-up (range) or $\pm$ SD	Outcomes
Abdin et al., 2019 <sup>51</sup> Mixed AF phenotype	55/183	$\geq 75$ y	Retrospective, single-centre	11.8 $\pm$ 5.4 mo	No difference in arrhythmia recurrence rate (24% vs 27%)
Abugattas et al., 2017 <sup>49</sup> Paroxysmal AF	53/106	$\geq 75$ y	Retrospective, double-centre	14 $\pm$ 4.2 mo	No difference in arrhythmia recurrence rate (19% vs 15%)
Boehmer et al., 2024 <sup>16</sup> Paroxysmal and persistent AF	268/268	$\geq 75$ y	Prospective, single-centre, propensity score matching (1:1)	18 mo (12-36 mo)	Higher arrhythmia recurrence rate in elderly: paroxysmal AF: 20% vs 29%; persistent AF: 26% vs 39%
Bulava et al., 2017 <sup>61</sup>	50/259	$\geq 80$ y	Retrospective database analysis	12 mo (all patients)	Higher arrhythmia recurrence rate in elderly with persistent AF: paroxysmal AF: 15% vs 29% (nonsignificant); persistent AF: 19% vs 41%
Cecchini et al., 2022 <sup>54</sup> Mixed AF phenotype	70/70	$\geq 80$ y	Retrospective, multicentre, propensity score matching (1:1)	23 mo (18-32.5 mo)	No difference in arrhythmia recurrence rate (29% vs 40%)
Heeger et al., 2019 <sup>55</sup> Mixed AF phenotype	104/104	$\geq 75$ y	Retrospective, multicentre, propensity score matching (1:1)	Elderly: 1.1 y (0.4-2.0 y); control: 1.2 y (0.6-1.5 y)	No difference in arrhythmia recurrence rate (18% vs 20%)
Metzner et al., 2016 <sup>48</sup> Mixed AF phenotype	94 elderly	$\geq 75$ y	Retrospective, single-centre	37 $\pm$ 20 mo	Arrhythmia recurrence rates after single procedure: paroxysmal AF: 54%; persistent AF: 69%
Natale et al., 2021 <sup>53</sup> Mixed AF phenotype	221/352	$\geq 75$ y	Prospective, single-centre, only female elderly	48 mo (all patients)	No difference in arrhythmia recurrence rate (47% vs 51%)
Nielsen et al., 2021 <sup>52</sup> Mixed AF phenotype	199/1554	$\geq 75$ y	Retrospective database analysis	12 mo (all patients)	No difference in arrhythmia recurrence rate (HR 1.01)
Tscholl et al., 2018 <sup>50</sup> Mixed AF phenotype	40/40	$\geq 75$ y	Retrospective, single-centre	12 mo (5-18 mo)	No difference in arrhythmia recurrence rate (25% vs 30%)
Willy et al., 2020 <sup>62</sup> Persistent AF	146 elderly	$\geq 75$ y	Prospective ablation registry	231 $\pm$ 399 d	Arrhythmia recurrence rates after single procedure 37%

AF, atrial fibrillation; HR, hazard ratio.

# Rate control in Guidelines

- Rate control is considered a modest treatment alternative
- Lenient rate control (<110 bpm) shown as sufficient
- Sufficient rate control might be limited by bradycardia episodes

Rate control therapy is recommended in patients with AF, as initial therapy in the acute setting, an adjunct to rhythm control therapies, or as a sole treatment strategy to control heart rate and reduce symptoms.<sup>458-460</sup>

**I**

**B**

Lenient rate control with a resting heart rate of < 110 b.p.m. should be considered as the initial target for patients with AF, with stricter control reserved for those with continuing AF-related symptoms.<sup>459,460,466</sup>

**IIa**

**B**

Combination rate control therapy should be considered if a single drug does not control symptoms or heart rate in patients with AF, providing that bradycardia can be avoided, to control heart rate and reduce symptoms.

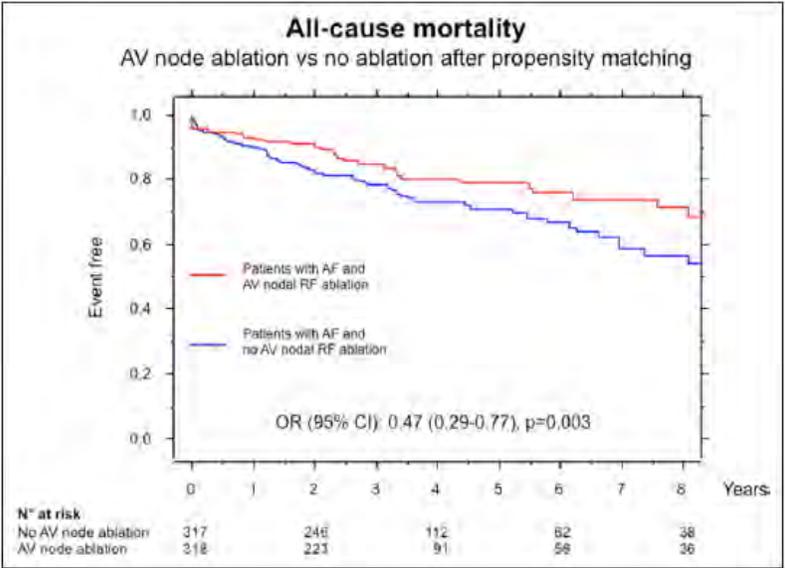
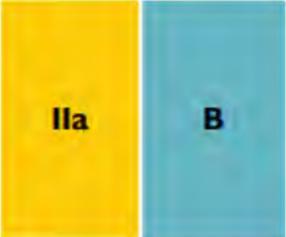
**IIa**

**C**

# AVN-Ablation + Pacemaker

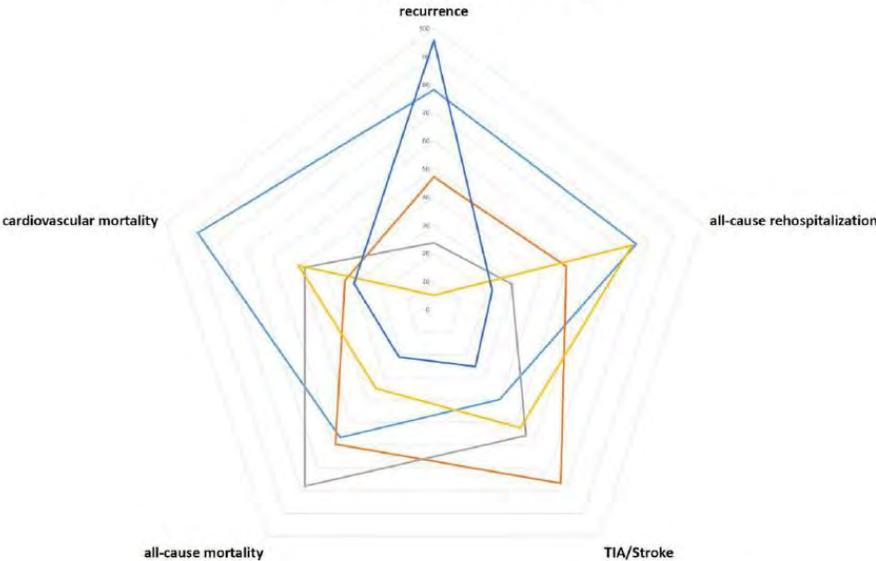
- AVN-Ablation + Pacemaker excepted treatment modality

Atrioventricular node ablation in combination with pacemaker implantation should be considered in patients unresponsive to, or ineligible for, intensive rate and rhythm control therapy to control heart rate and reduce symptoms. <sup>467-469</sup>

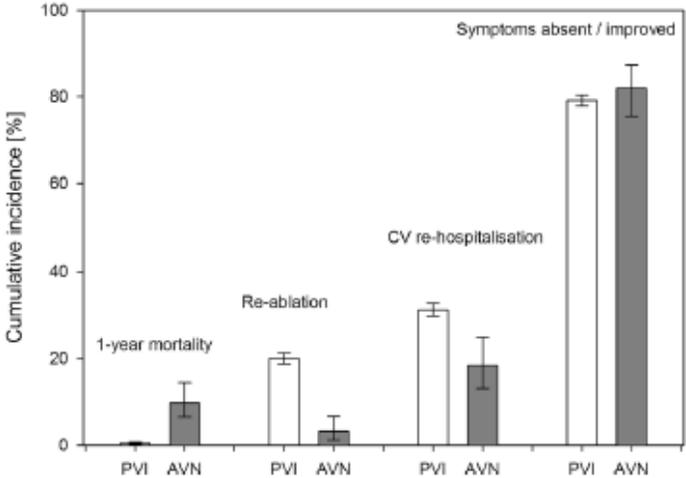


Garcia et al. – Circ Arr EP 2016

The summary of the result of SUCRA plot



— medication therapy — Radio frequency ablation — Cryoballoon ablation  
 — Surgical ablation — AVN ablation+PPM

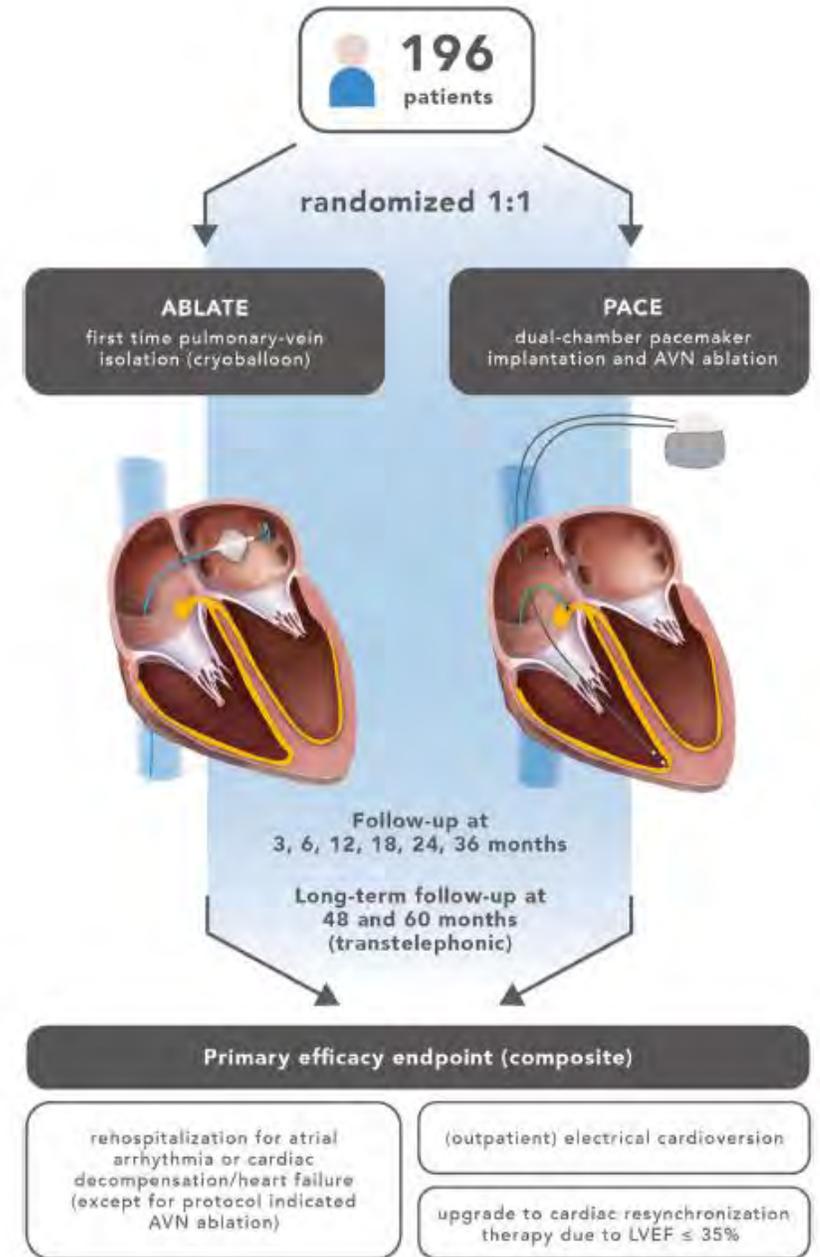


Wasmer et al. – Clin Research Card 2018

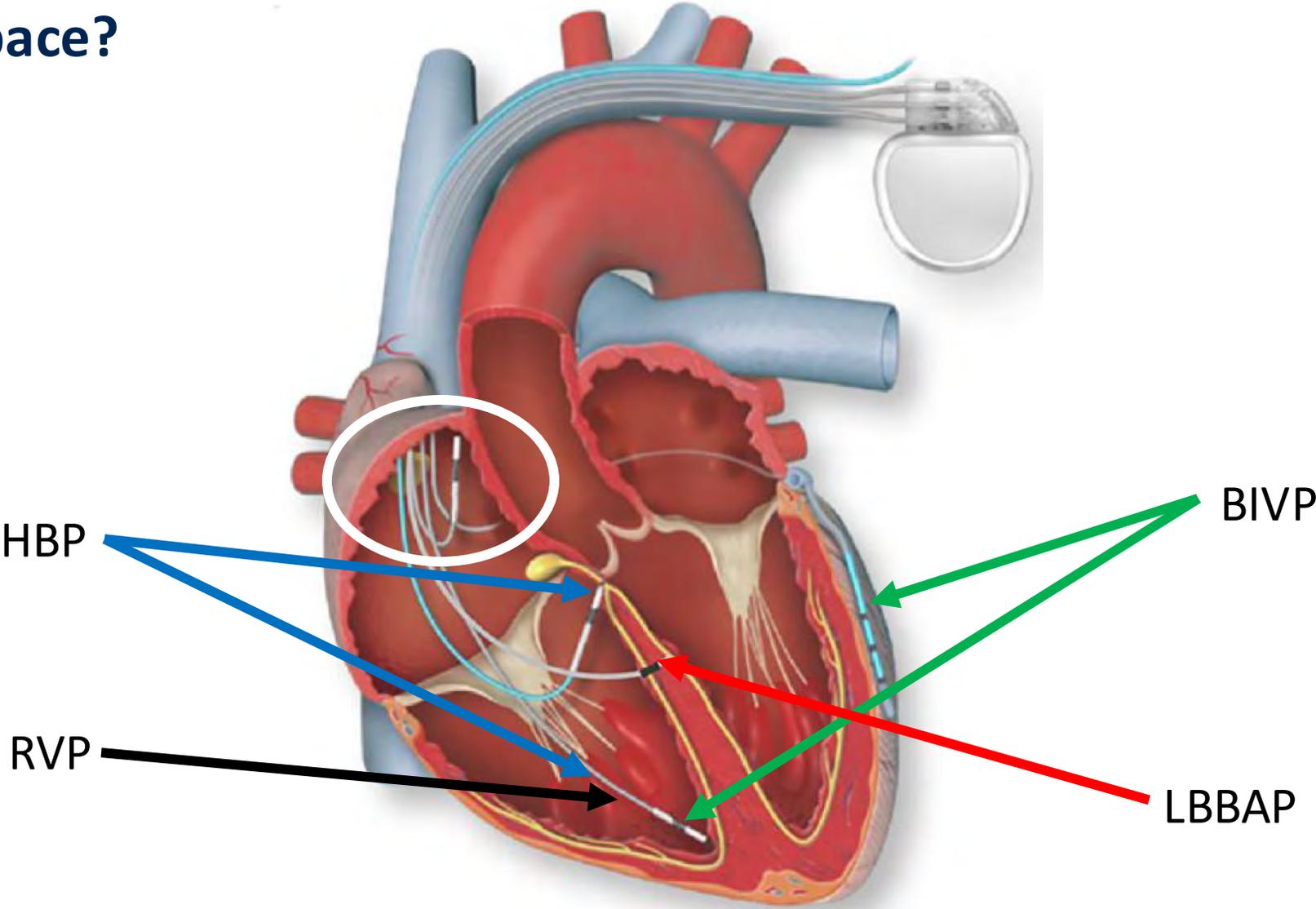
Burri et al. – Europace 2024

# Ablate versus PACE Trial

- 196 Patients enrolled
- Persistent Afib in the elderly (>75y) treated by Cryo-PVI vs. Pace/Ablate
- Composite EP of Rehospitalisation / ECV / Upgrade to CRT



# How to pace?



# AVN-Ablation + Bivent (CRT)

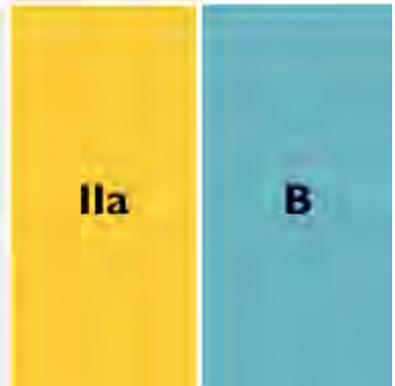
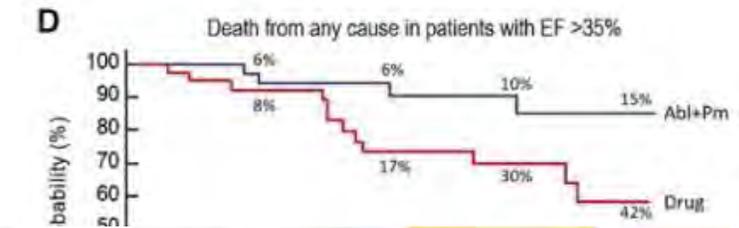
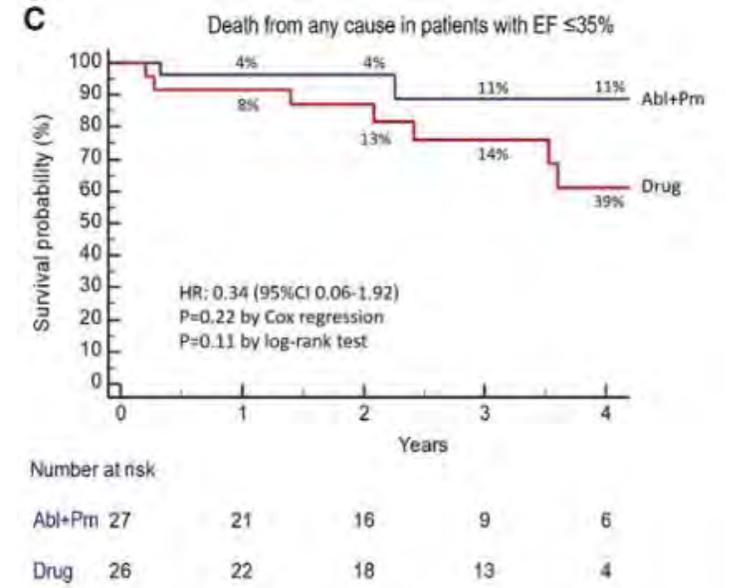
- **APAF-CRT:** Patient with perm.Afib with severe symptoms + 1HFH
- Randomisation AVNA/CRT vs drug rate control
- Result: reduction of ACM, not dependent on baseline EF

AV junction ablation and cardiac resynchronization for patients with permanent atrial fibrillation and narrow QRS: The APAF-CRT Mortality Trial. *Brignole M et al.*



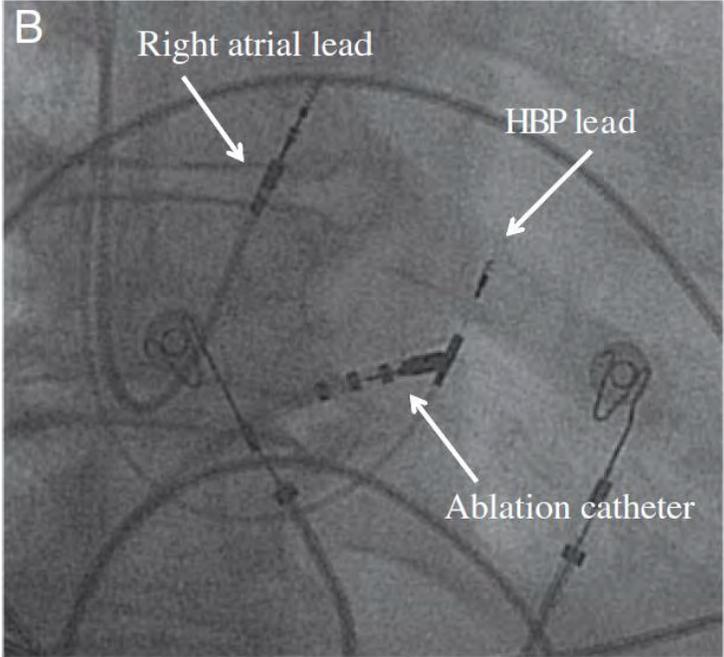
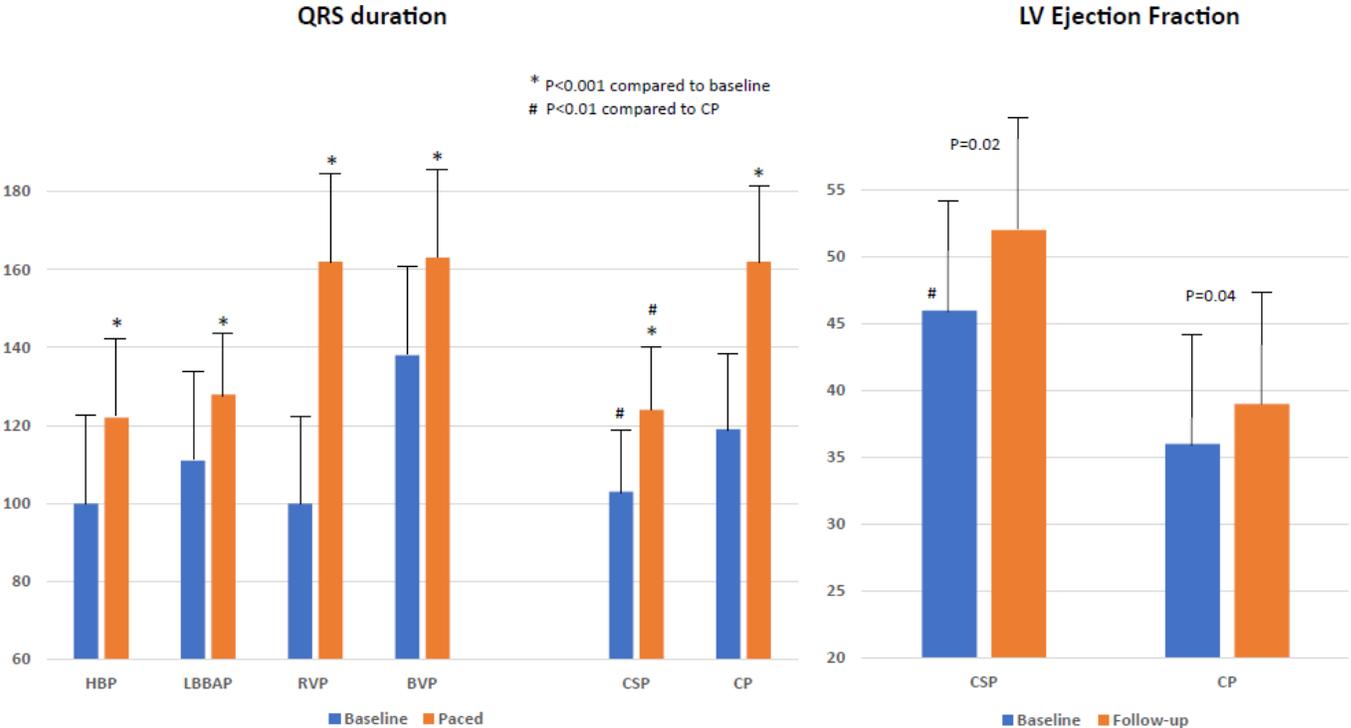
<b>133</b> pts with: • Permanent AF • Narrow QRS • ≥1 HF hospitalization • Severe symptoms	<b>63</b> Rate control <b>ABL+CRT</b>	HR = <b>70</b> bpm	<b>11%</b> (7 pts)
	<b>70</b> Rate control <b>DRUGS</b>	HR = <b>82</b> bpm	<b>29%</b> (20 pts)

Atrioventricular node ablation combined with cardiac resynchronization therapy should be considered in severely symptomatic patients with permanent AF and at least one hospitalization for HF to reduce symptoms, physical limitations, recurrent HF hospitalization, and mortality.<sup>470,471</sup>



# AVN-Ablation + CSP

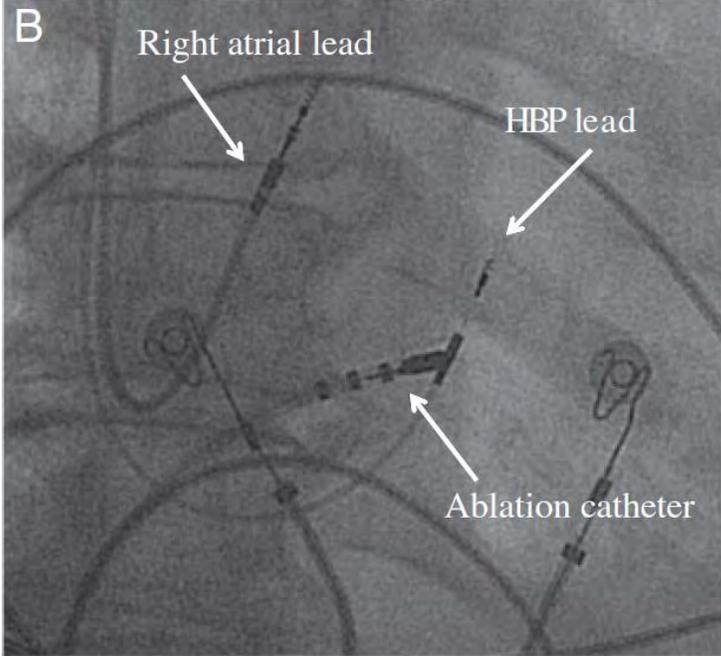
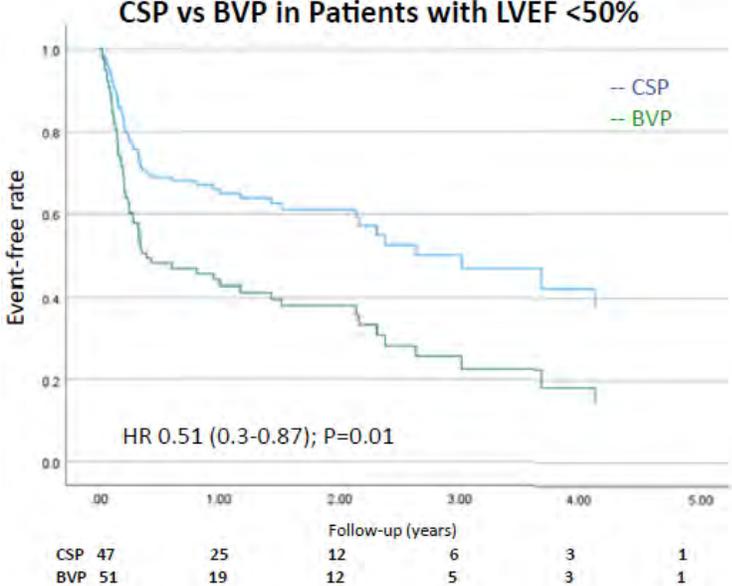
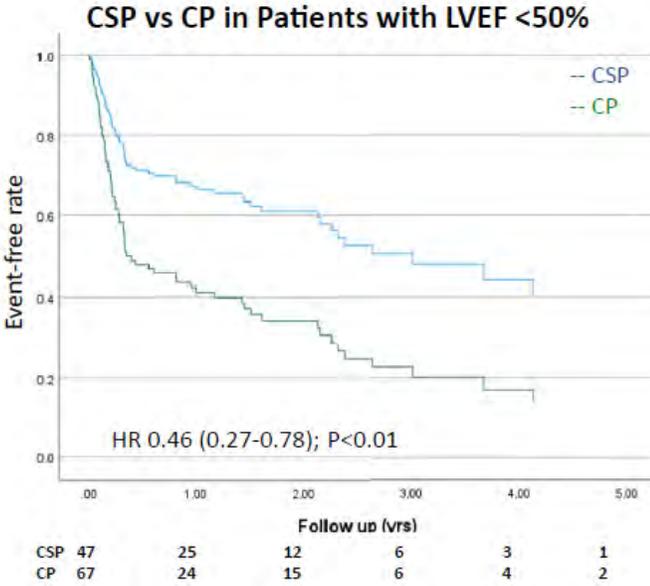
- Feasible, but consider back-up lead in HBP
- Potential benefit over RVP / CRT irrespective of EF



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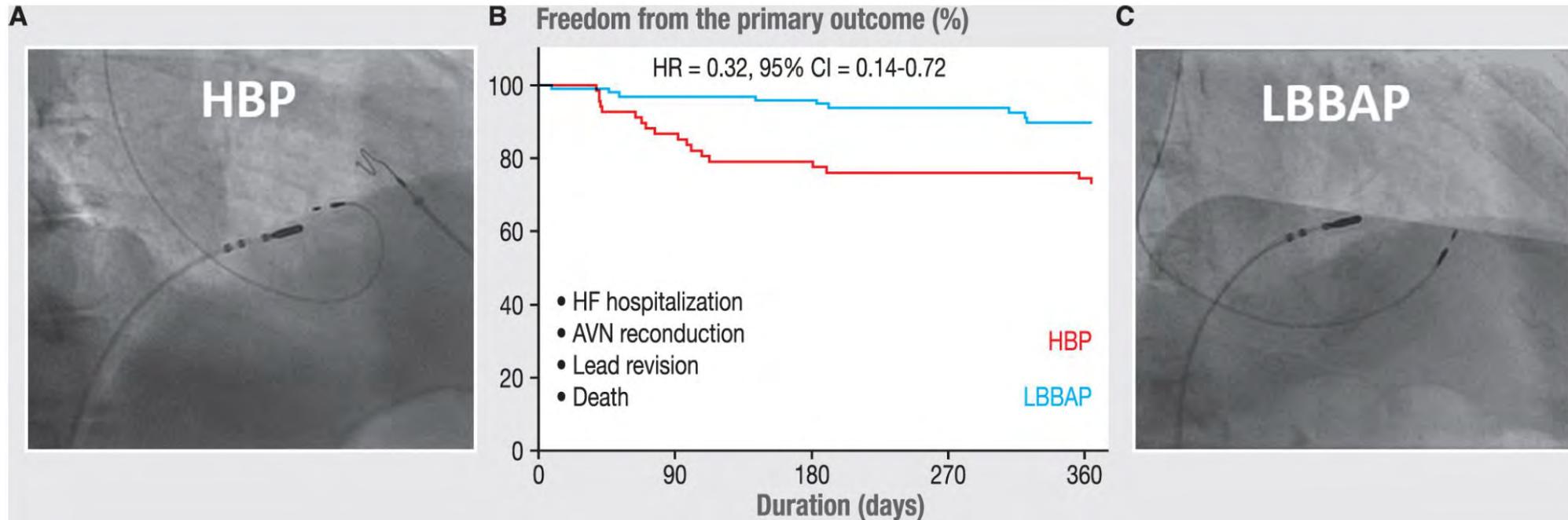
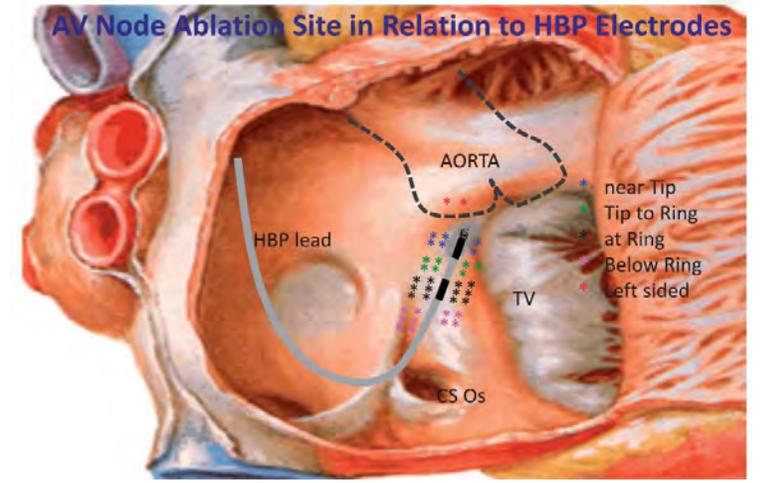
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## Freedom from Death or HFH



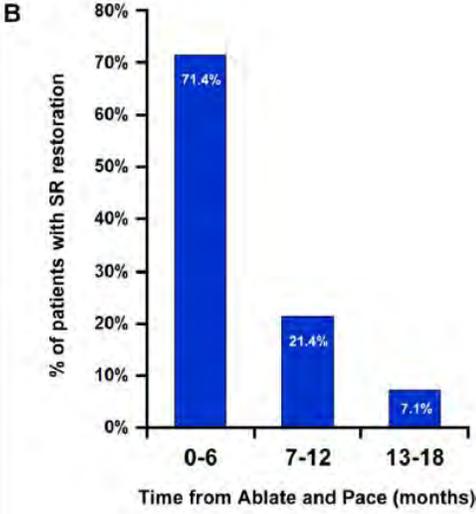
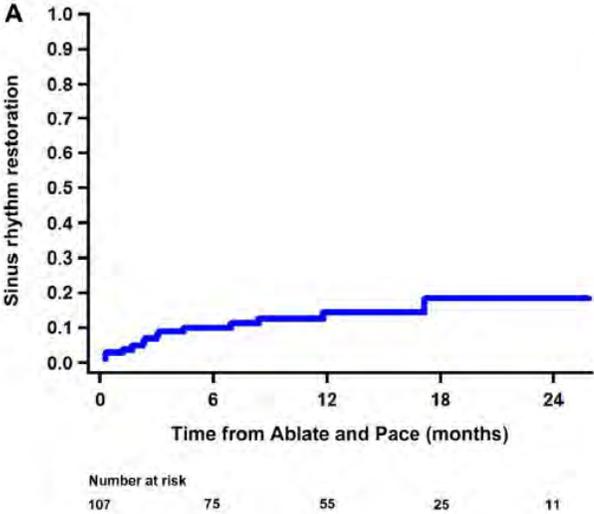
# HBP vs LBBAP in AVNA

- LBBAP with better longterm results in prospective dataset
- Distance of ablation site to lead insertion main concern



# Why should we need an atrial lead?

- SNR restoration not uncommon after AVNA
- AF-duration and LA-dimension most relevant predictors

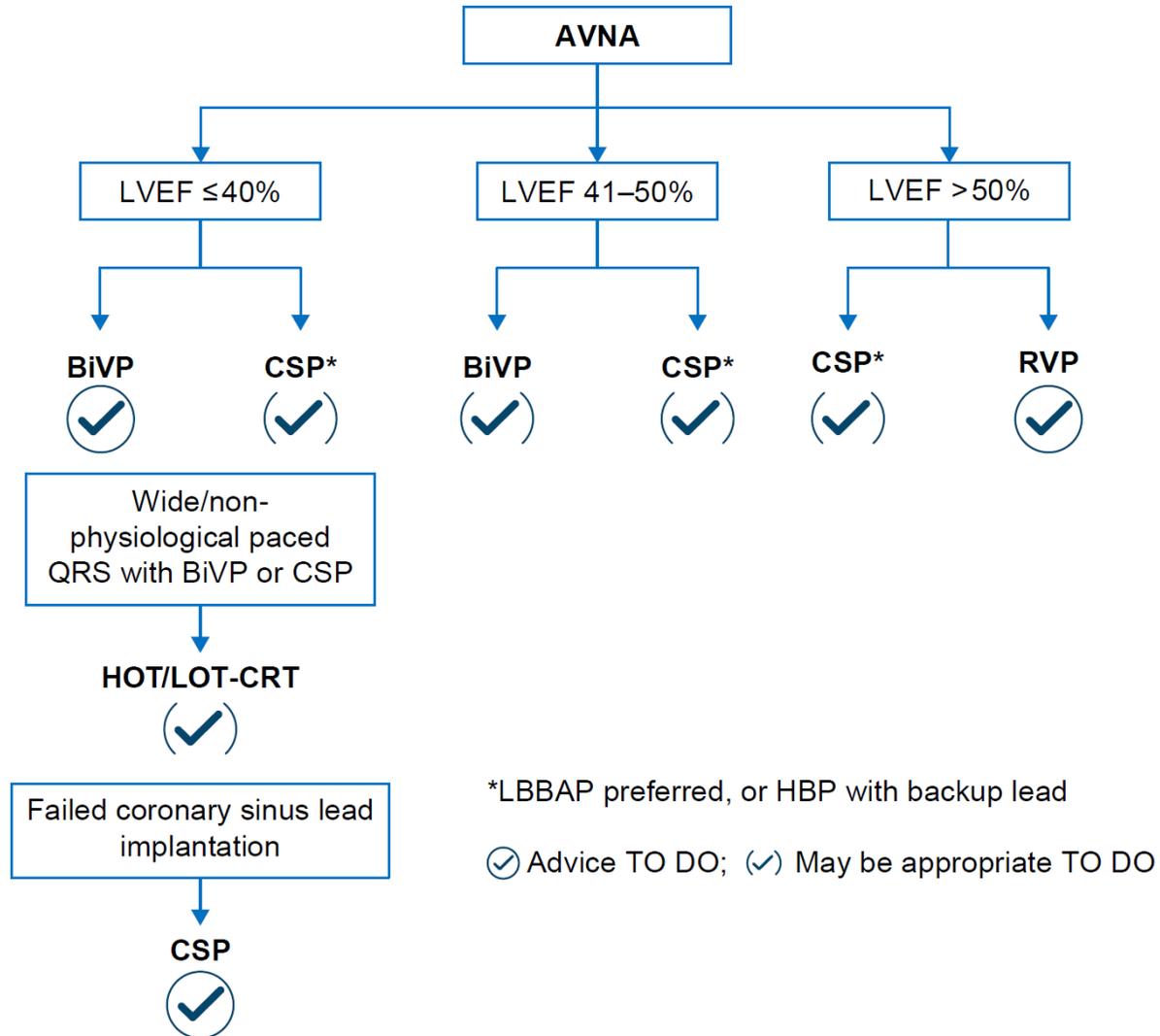


Predictors of spontaneous sinus rhythm restoration: univariate and multivariable Cox proportional hazards analysis

Variable	Univariate analysis		Multivariable analysis	
	Hazard ratio (95% CI)	p value	Hazard ratio (95% CI)	p value
Duration of permanent AF <12 months	14.667 (3.07- 69.97)	<0.001	7.694 (1.10-53.88)	<b>0.040</b>
Previous attempt/s at catheter ablation of AF	3.708 (0.61-22.46)	0.154	3.234 (0.13-78.65)	0.471
LAVi <49 mL/m <sup>2</sup>	16.392 (4.12-65.20)	<0.001	14.791 (2.15-101.7)	<b>0.006</b>
Chronic kidney disease	0.098 (0.01-0.78)	0.028	0.039 (0.00-0.423)	0.008
ACE-Is or ARBs	3.600 (1.11-11.66)	0.033	6.399 (0.76-53.67)	0.087

ACE-I = angiotensin-converting enzyme inhibitor; AF = atrial fibrillation; ARB = angiotensin receptor blocker; CI = confidence interval; LAVi = left atrial volume index.

# EHRA consensus statement on CSP



## ...typical Berlin Case

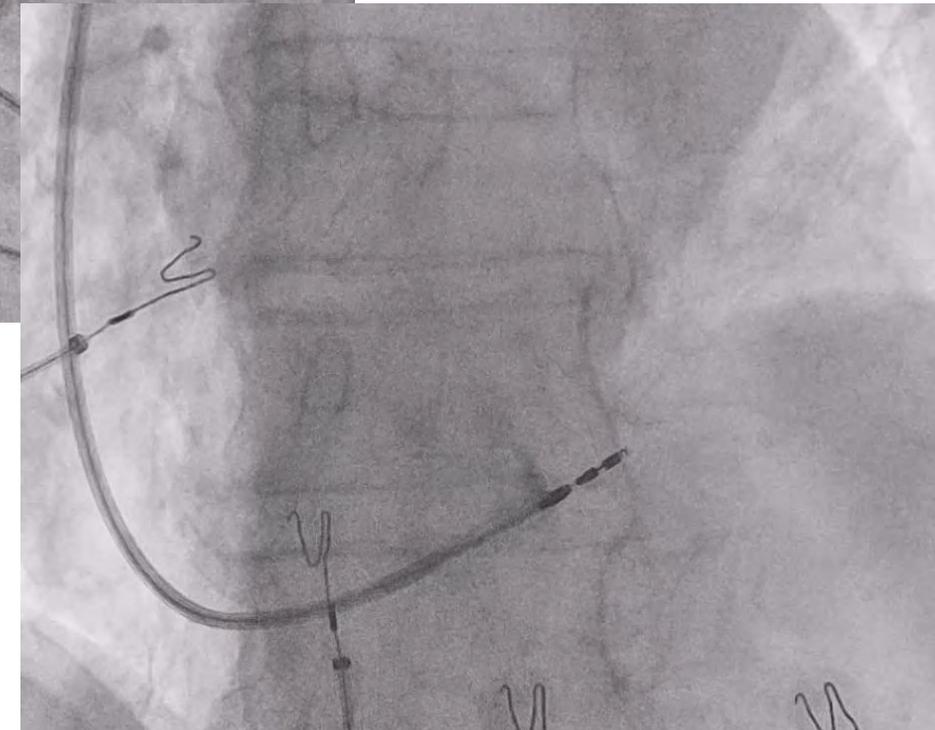
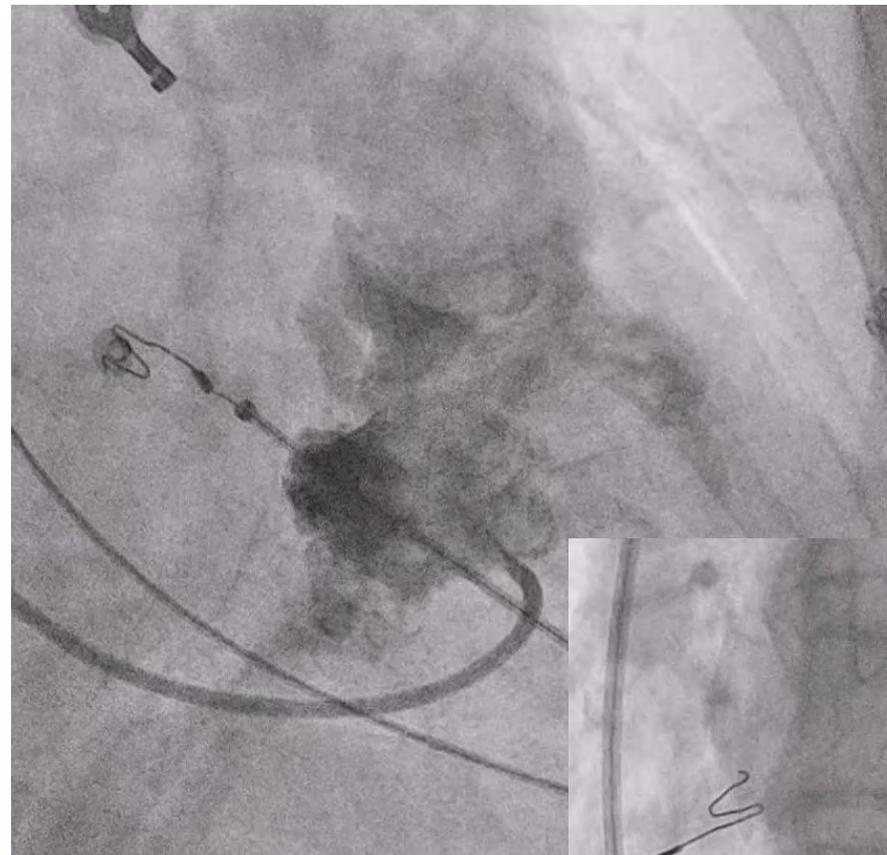
- 78yo gentleman
- PVI+LA-substrate modification+CTI in 2021, LVEF 45%
- since 6 m with recurrence of dyspnea





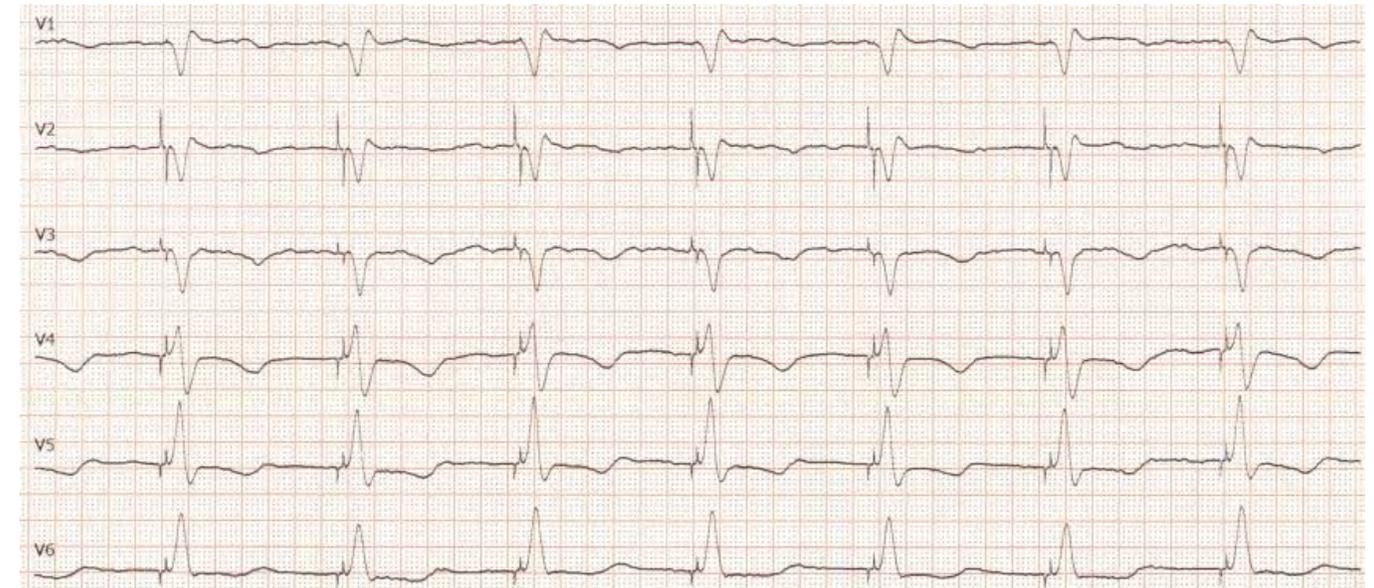
## ...typical Berlin Case

- LA Volume 196 ml
- PVs still isolated
- Multiple ATs with different activation patterns and CLs
- Reablation of anterior lines and roof line
- ECV led to Sinusbradycardia, HR 30/min
- Implantation of LBBAP-Device



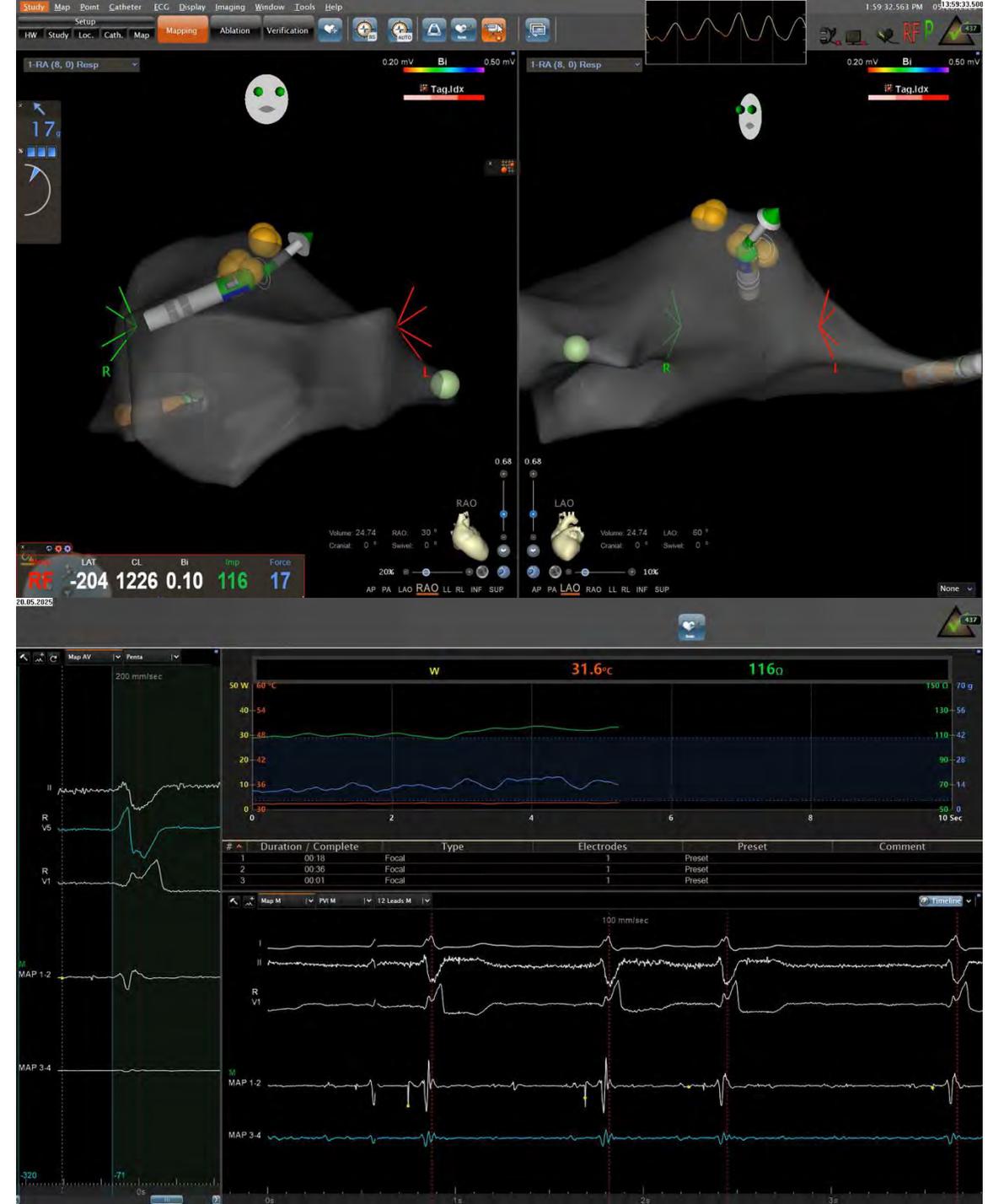
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- Implantation of LBBAP-Device
- AVNA after 4 weeks



# Whats to come

- **ABACUS:** AVNA+CSP vs PVI in persistent Afib+HF, n=220
- **RAFT P&A:** AVNA+CSP vs OMT in persistent/perm.Afib, n=600
- **PACE-FIB:** AVNA+CSP vs OMT in perm Afib with HFpEF/HFmrEF, n=334
- **CONDUCT-AF:** AVNA+CSP vs AVNA+BIVP in Afib+HF, n=82

# Conclusion

**We (still) need AVNA (for some patients) and (probably at best) CSP (but are waiting on more data)!**



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**Thank you for your attention!**

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# New Technologies in Atrial Fibrillation Treatment

