

# A difficult case of AF

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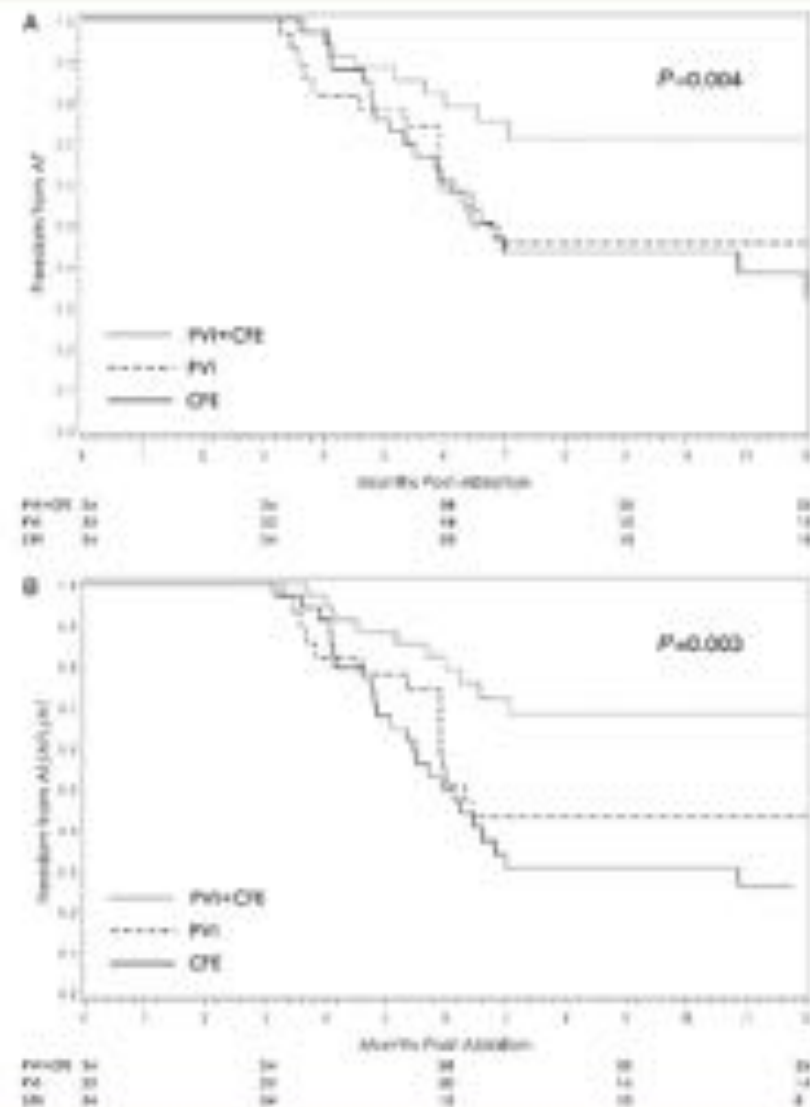
No Disclosure

## Substrate and T Atrial Fibrillation multicentre, int

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**Figure 3** (A and B) Kaplan–Meier curves depicting time to first atrial fibrillation (AF) recurrence (A) and time to first AF, atrial flutter (AF), or atrial tachycardia (AT) recurrence (B) after one procedure in the pulmonary vein isolation (PVI) strategy, the complex fractionated electrogram (CFE) strategy, and the combined strategy of PVI followed by CFE ablation (PVI + CFE). PVI + CFE had a significantly higher freedom from AF after one procedure (78%) compared with either PVI (68%) or CFE (28%) alone (log-rank  $P = 0.004$ ). PVI + CFE also had a significantly higher freedom from AF/AT/AT after one procedure (78%) compared with either PVI (55%) or CFE (28%) alone (log-rank  $P = 0.003$ ). Post hoc analysis comparing individual groups is detailed in text. Ninety-six percent of patients who were considered successful were off anti-arrhythmic medications and were evenly distributed among groups (also detailed in text). Numbers at risk for each group are indicated below the x-axis.

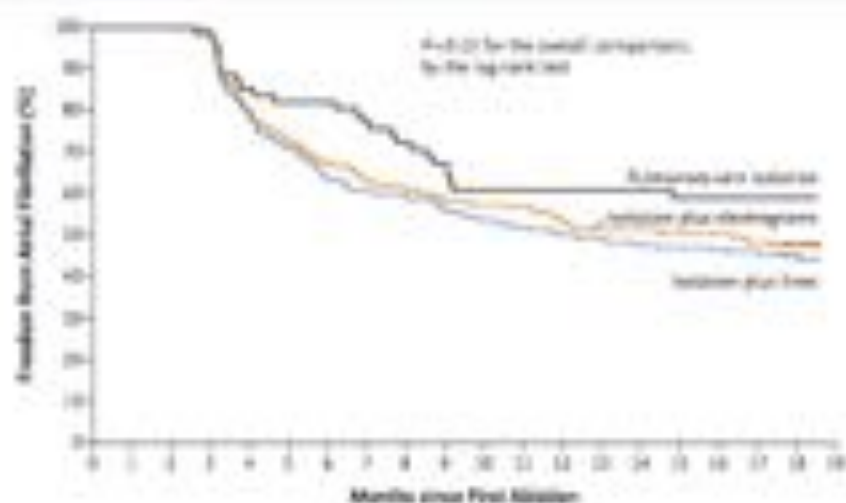


here. A total of 101  
0 underwent abla-  
gating the ablation

## ORIGINAL ARTICLE

## Approaches to Catheter Ablation for Persistent Atrial Fibrillation

Azul Verna, M.D., Chen-yang Jiang, M.D., Timothy R. Betts, M.D., M.B., Ch.B., Jian Chen, M.D., Isabel Delsenhofer, M.D., Roberto Mantovan, M.D., Ph.D., Laurent Macé, M.D., Carlos A. Morillo, M.D., Wilhelm Haerikang, M.D., Ph.D., Rukshen Weerasooriya, M.D., Jean-Paul Albenque, M.D., Stefano Nardi, M.D., Endj Menardi, M.D., Paul Novak, M.D., and Prashanthan Sanders, M.B., B.S., Ph.D., for the STAR AF II Investigators\*



No. at Risk	0	4	8	12	16	18
Pulmonary vein isolation	81	60	50	41	34	31
Isolation plus ablation of complex fractionated electrograms	144	142	131	127	124	121
Isolation plus linear	144	140	131	125	122	117

**Figure 3. Freedom from atrial fibrillation.**

The graph shows Kaplan-Meier estimates of freedom from documented atrial fibrillation more than 30 seconds after a single procedure, with or without the use of antiarrhythmic medications. There were no significant differences between groups ( $P=0.02$ ). Isolation plus ablation of complex fractionated electrograms denotes ablation with pulmonary vein isolation plus additional ablation of complex fractionated electrograms. Isolation plus linear refers to ablation with pulmonary vein isolation plus additional linear ablation.

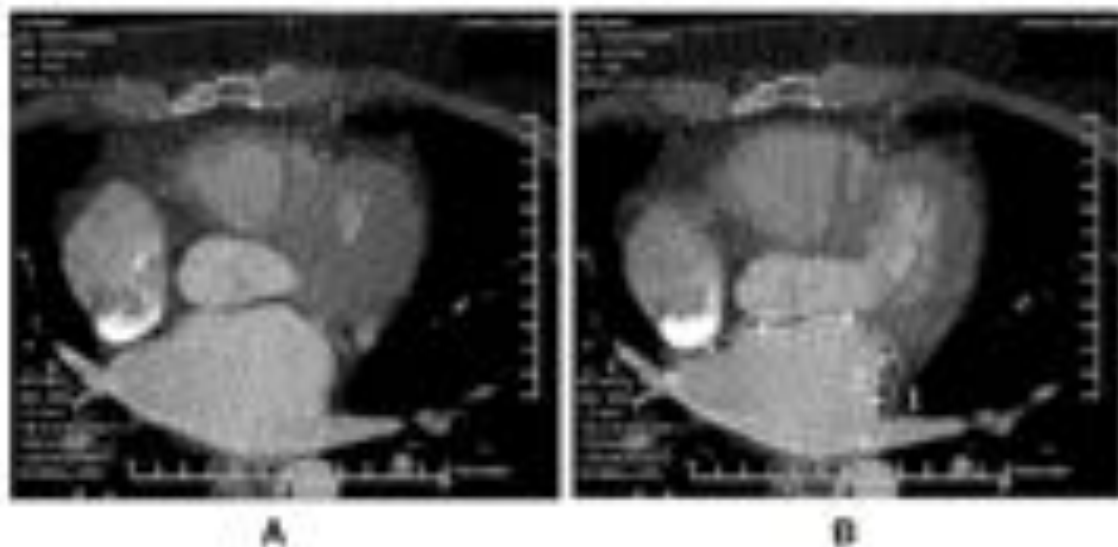


## Extensive Ablation During Pulmonary Vein Antrum Isolation Has No Adverse Impact on Left Atrial Function: An Echocardiography and Cine Computed Tomography Analysis

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 STEVEN HAO, M.D.,† SALWA BEHEIRY, R.N.,† STEPHEN MINOR, M.D.,\*  
 VOLKAN OZDURAN, M.D.,\* SAMY CLAUDE ELAYL, M.D.,\* DAVID O. MARTIN, M.D.,\*  
 ROBERT A. SCHWEIKERT, M.D.,\* WALID SALIBA, M.D.,\* JAMES D. THOMAS, M.D.,\*  
 MARIO GARCIA, M.D.,\* ALLAN KLEIN, M.D.,\* and ANDREA NATALE, M.D.\*

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Verma et al. Left Atrial Function After PVAI 741



**Figure 1.** Cine-sectional views of the left atrium using cine selective beam computed tomography 6 months postpulmonary vein antrum isolation in a single patient. Panel A depicts the maximum left atrial area at end-systolic diastole as defined by the white dashed line labeled "2". Panel B depicts the minimum left atrial area at end-systolic diastole as defined by the white dashed line labeled "1". The white dashed line labeled "1" represents the maximum left atrial area shown in Panel A. In this case, the left atrium demonstrates good contractile function, with a substantial reduction in both area and volume from end systole to end diastole, despite extensive ablation during PVAI. The calculated left atrial ejection fraction was 27% for this patient postablation.

# Left Atrium Posterior Wall

The posterior wall of the left atrium (LAPW) embryologically originates from the same cells of the pulmonary vein (PV) and trigger activity and rotors from the LA posterior wall have been reported.

Isolation of the LAPW appears to be an important strategy in AF ablation, especially in patients with persistent AF.

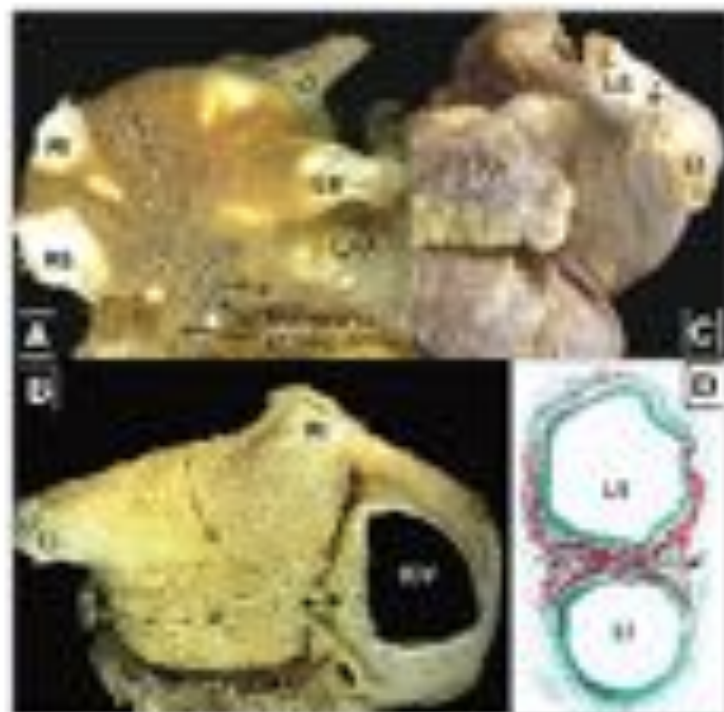
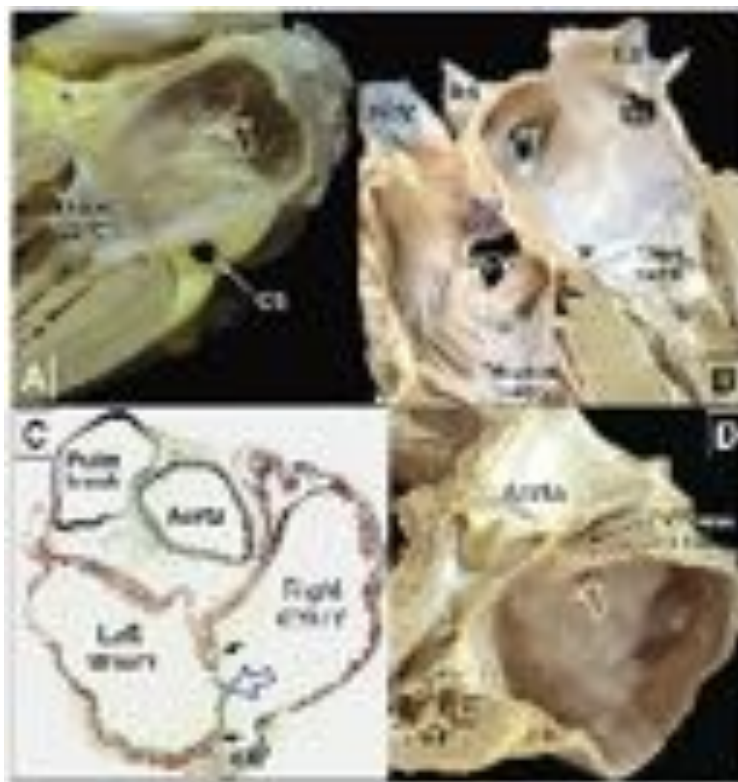
Bai et Al. demonstrate in 52 pts. with permanent AF that extended (LA septum+CS+LAPW isolation) PVAI provides additional benefits over PVAI alone.



## Left Atrial Anatomy Revisited

Siew Yen Ho, PhD, FRCPath; José Angel Cabrera, MD; Damian Sanchez-Quintana, MD

224 *Circ Arrhythmia Electrophysiology* February 2012



# Clinical Case 1

## AF History

- B.A, ♂ 51yrs. 2007 paroximal AF
- 2011 : Patients with drug-refractory, high-burden paroxysmal (episodes >6 h, > 4 in 6 months)
- EF:62%, mild enlargement LA:25 cm<sup>2</sup>
- IC AA no effect
- TEE :normal



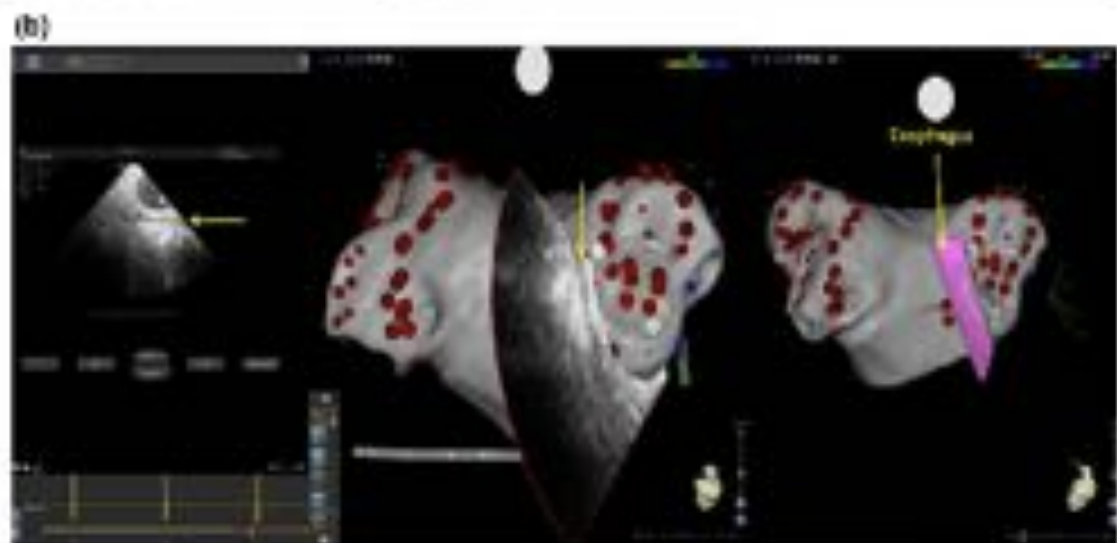
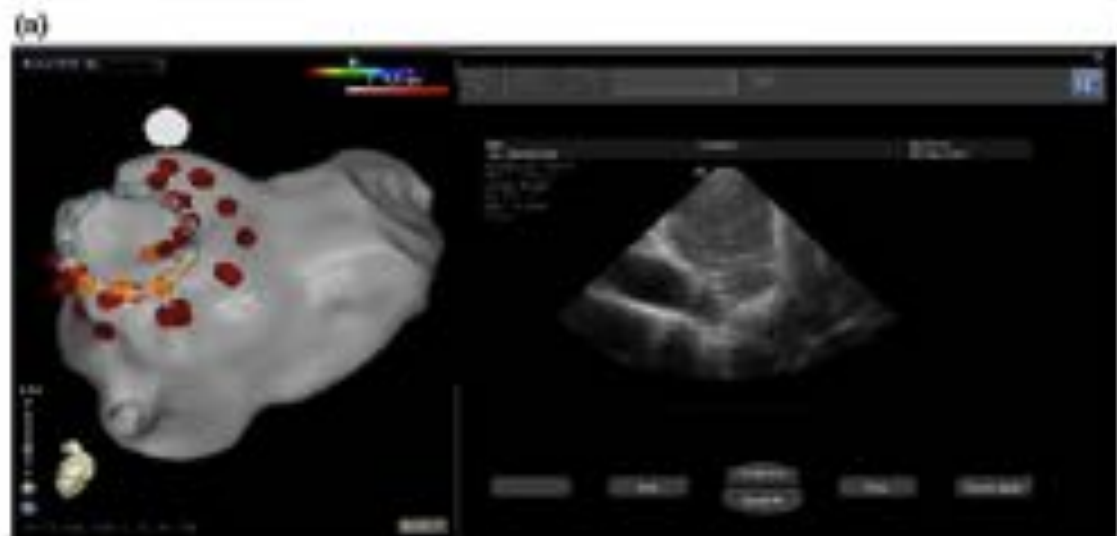
PV isolation: Revolution Protocol



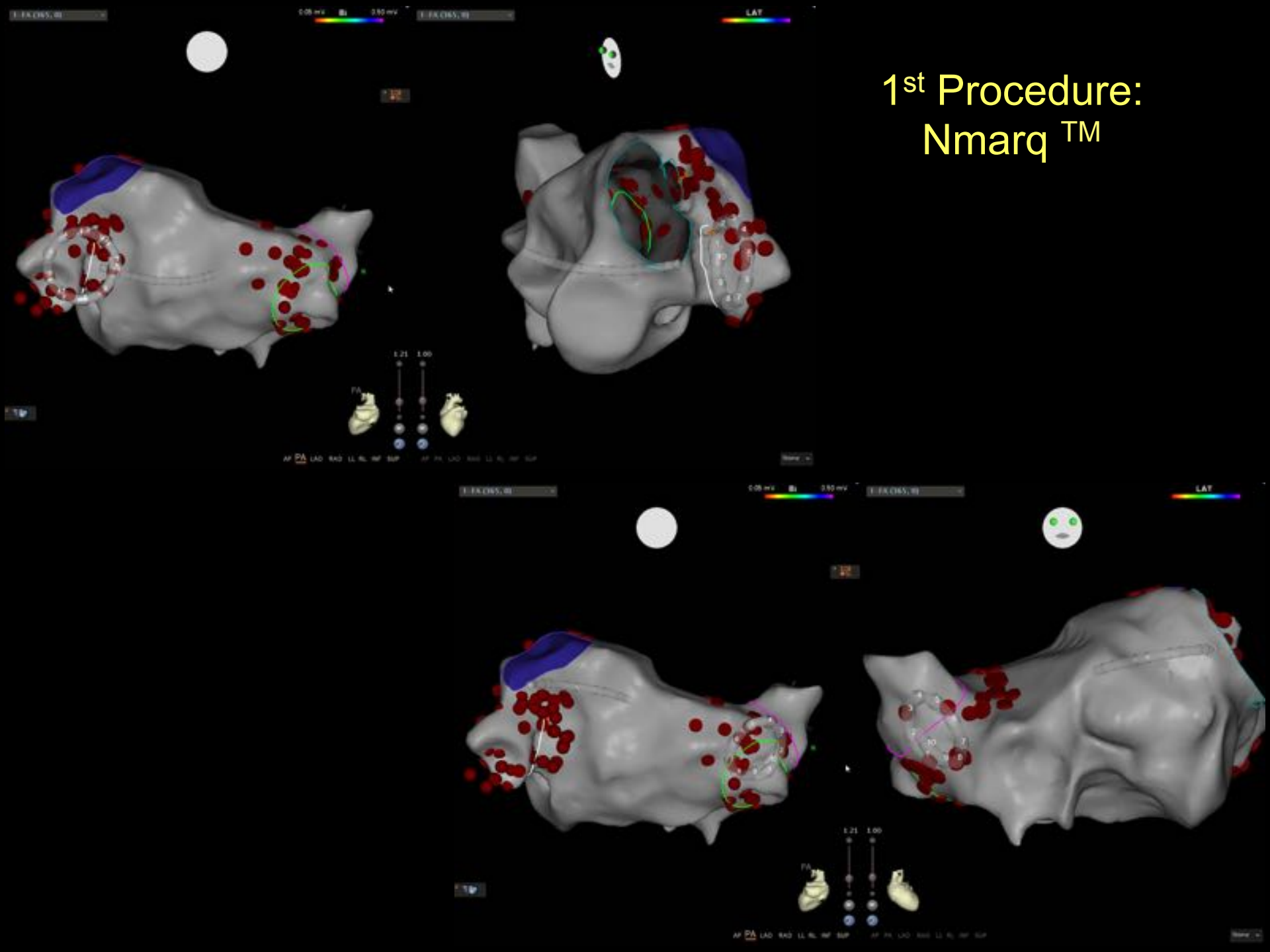
## Usefulness of intracardiac echocardiography during pulmonary vein isolation with the novel multipolar irrigated ablation catheter (nMARQ™)

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Stefania Riva<sup>1</sup> · Valentina Romano<sup>1</sup> · Massimo Moltruso<sup>1</sup> · Fabrizio Tondo<sup>1</sup> ·  
Giuseppe De Martino<sup>1</sup> · Benedetta Majocchi<sup>1</sup> · Vittoria Marino<sup>1</sup> · Eleonora Russo<sup>1</sup> ·  
Francesca Pizzaniglio<sup>1</sup> · Giuseppe Del Giorno<sup>1</sup> · Gemma Polarpolisio<sup>1</sup> · Luigi Di Biase<sup>3</sup> ·  
Andrea Natale<sup>4</sup> · Claudio Tondo<sup>1</sup>

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# 1<sup>st</sup> Procedure: Nmarq<sup>TM</sup>

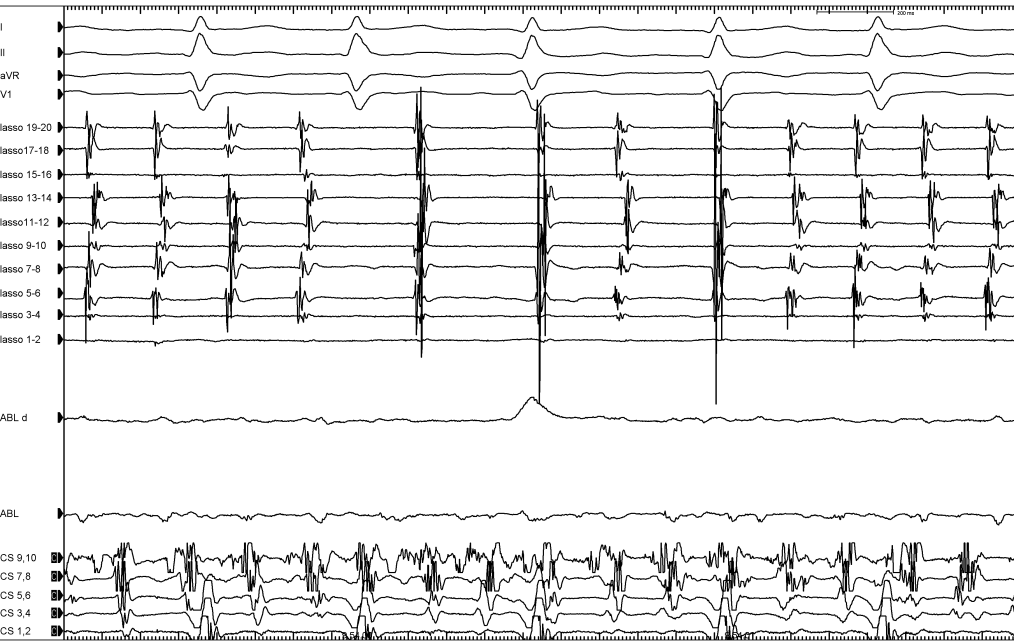




LIPV basal

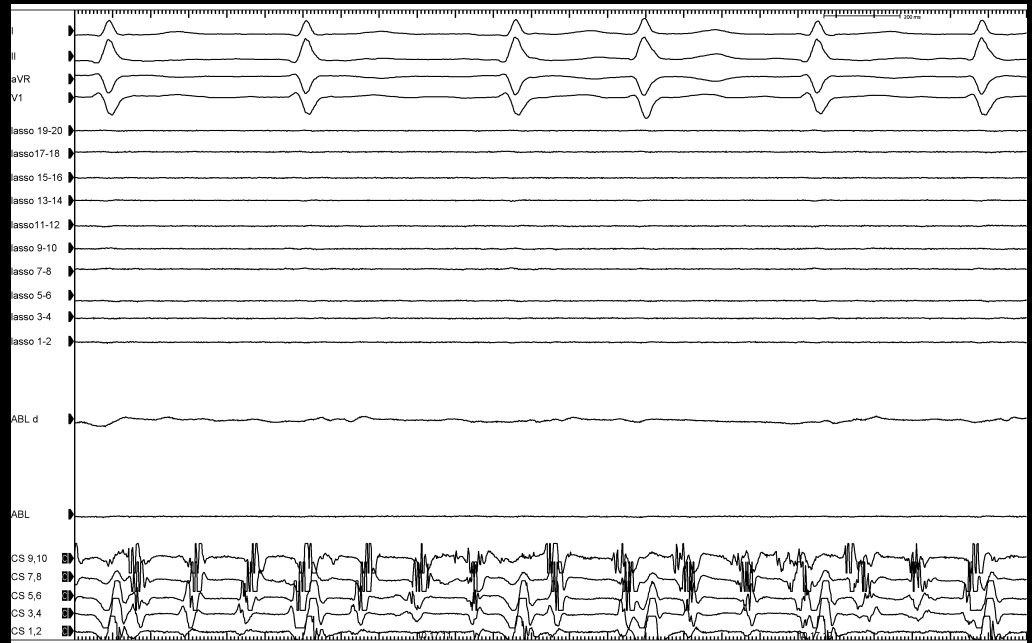
LIPV isolation





RSPV basal

RSPV isolation

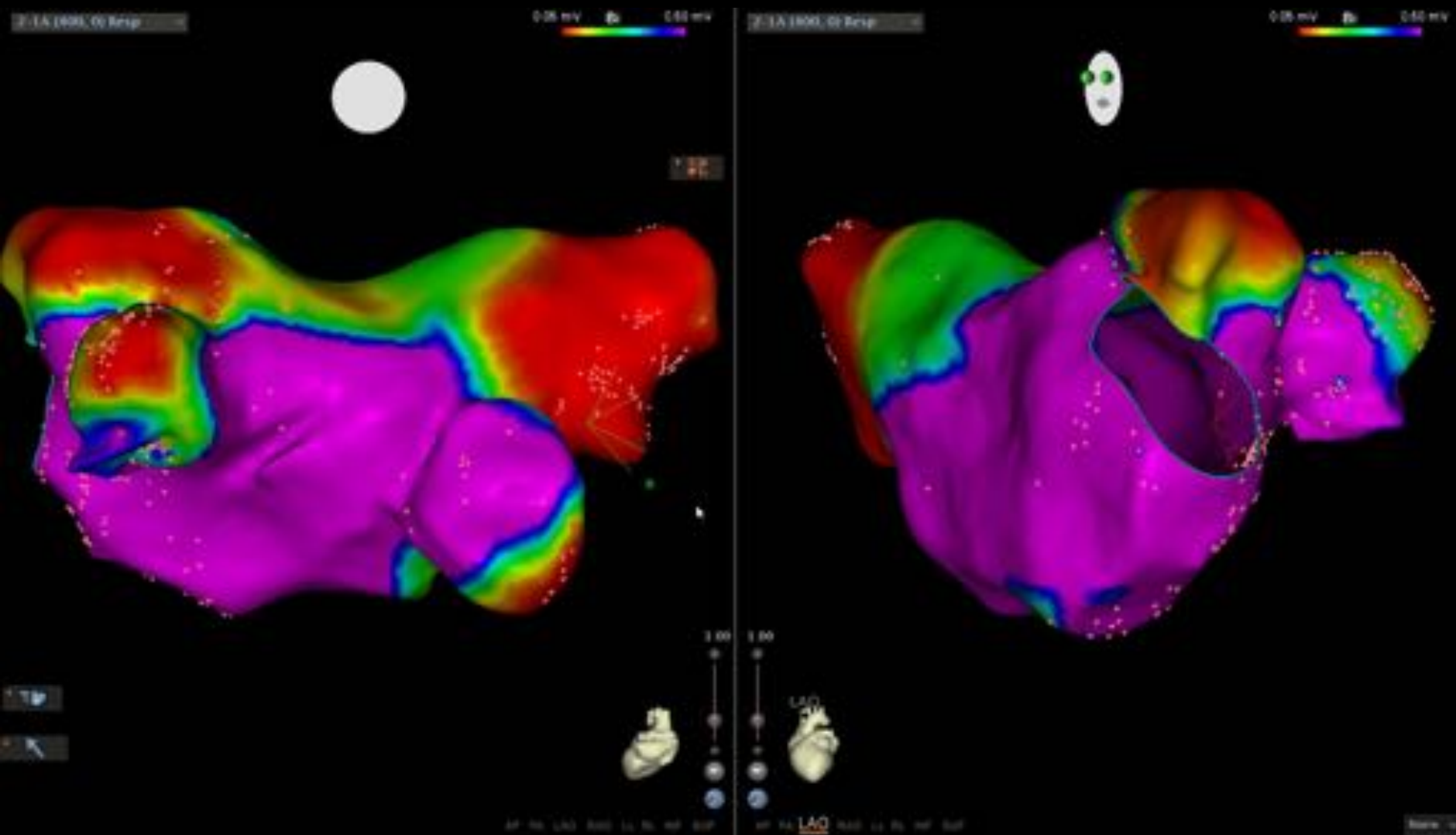


# AF ablation 2<sup>nd</sup> Procedure

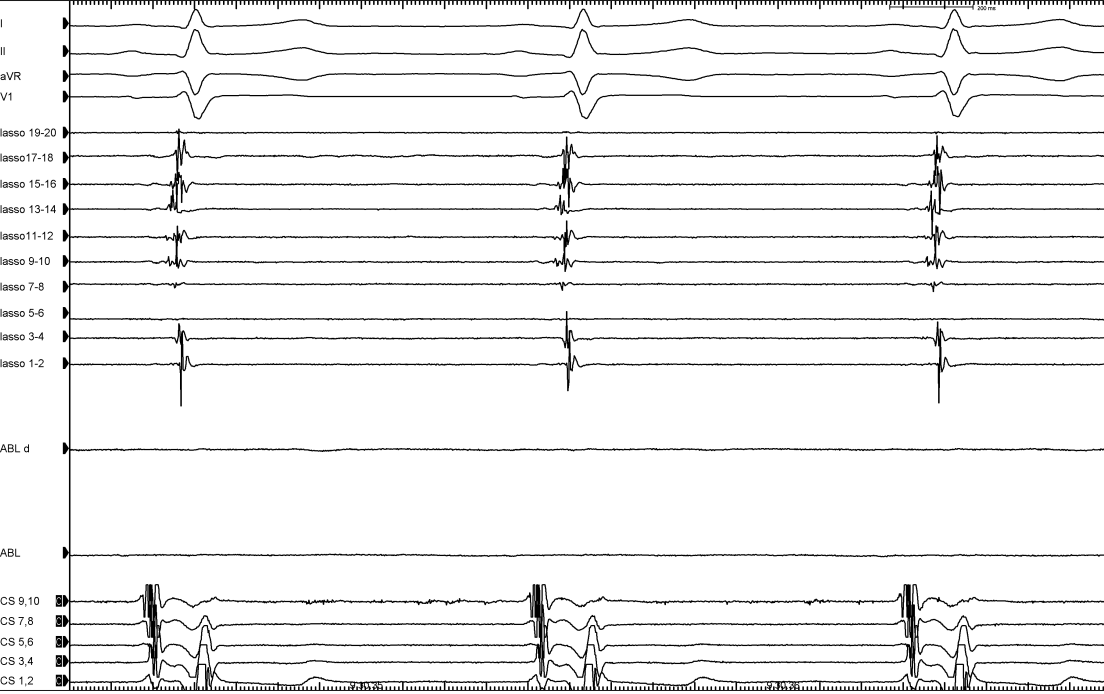
## **AF recurrence with frequent and persistent AF episodes**

- Admission to the Hospital : SR but AF during recovery
- EF:56 %
- LA enlargement : Area :30 cm<sup>2</sup>

# 2<sup>nd</sup> Procedure- 1 step:check PV isolation





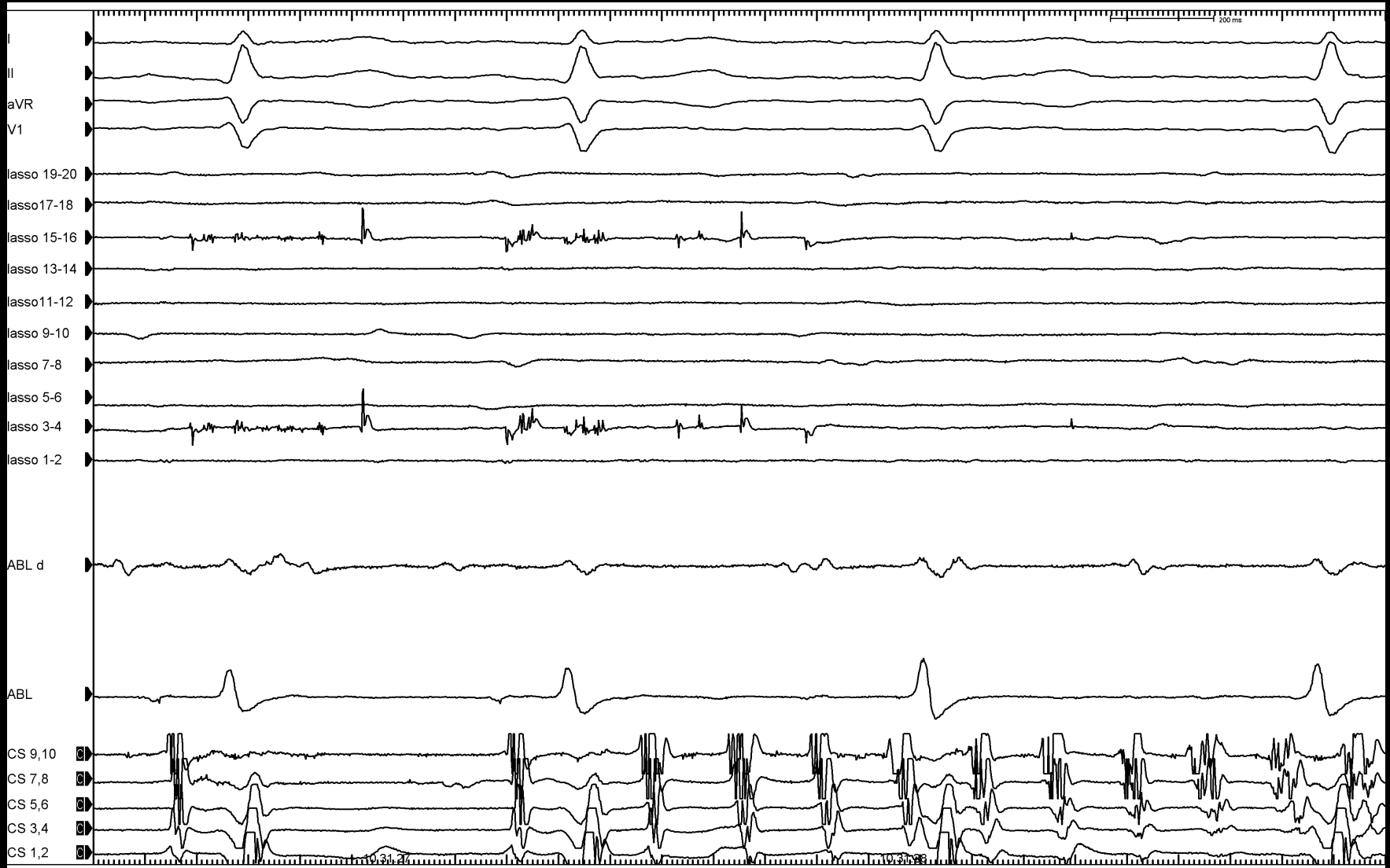


LIPV basal

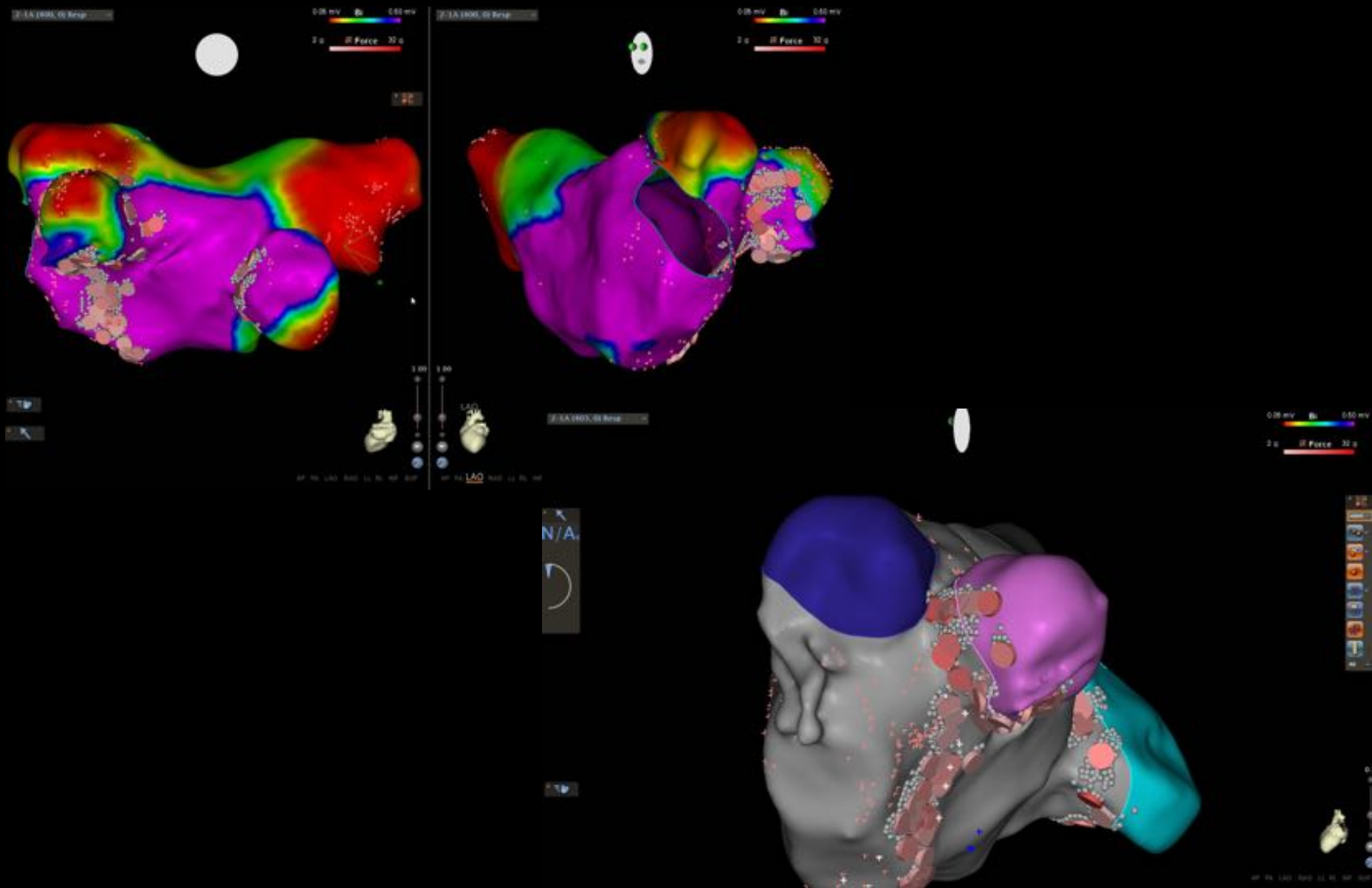
LIPV isolation



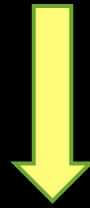
# Adenosine :check LIPV dormant conduction AF induction



# 2<sup>nd</sup> Procedure- 2 step: RIPV isolation +MIG

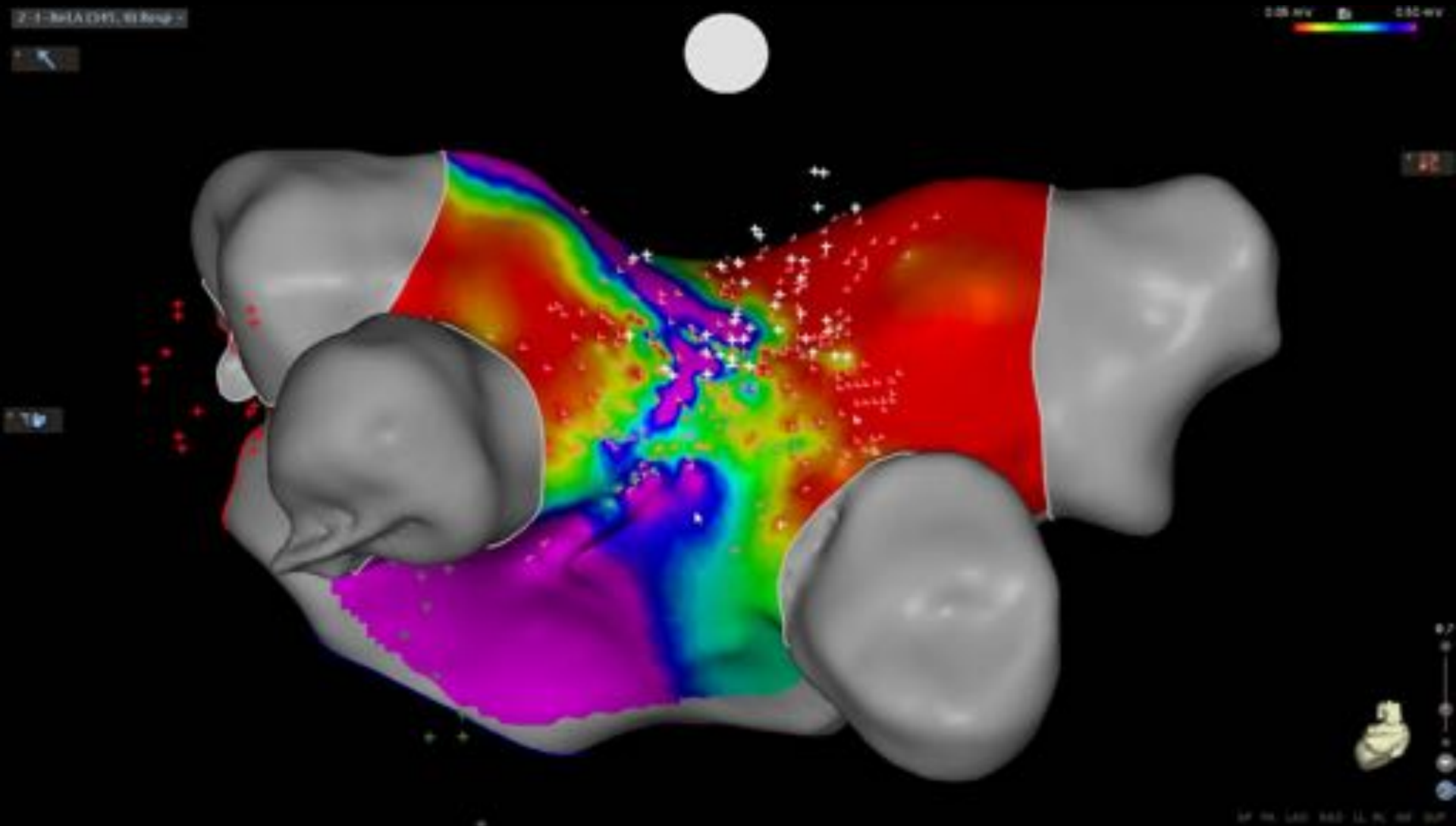


PVI + MIG: AFib persistence



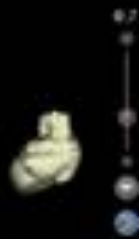
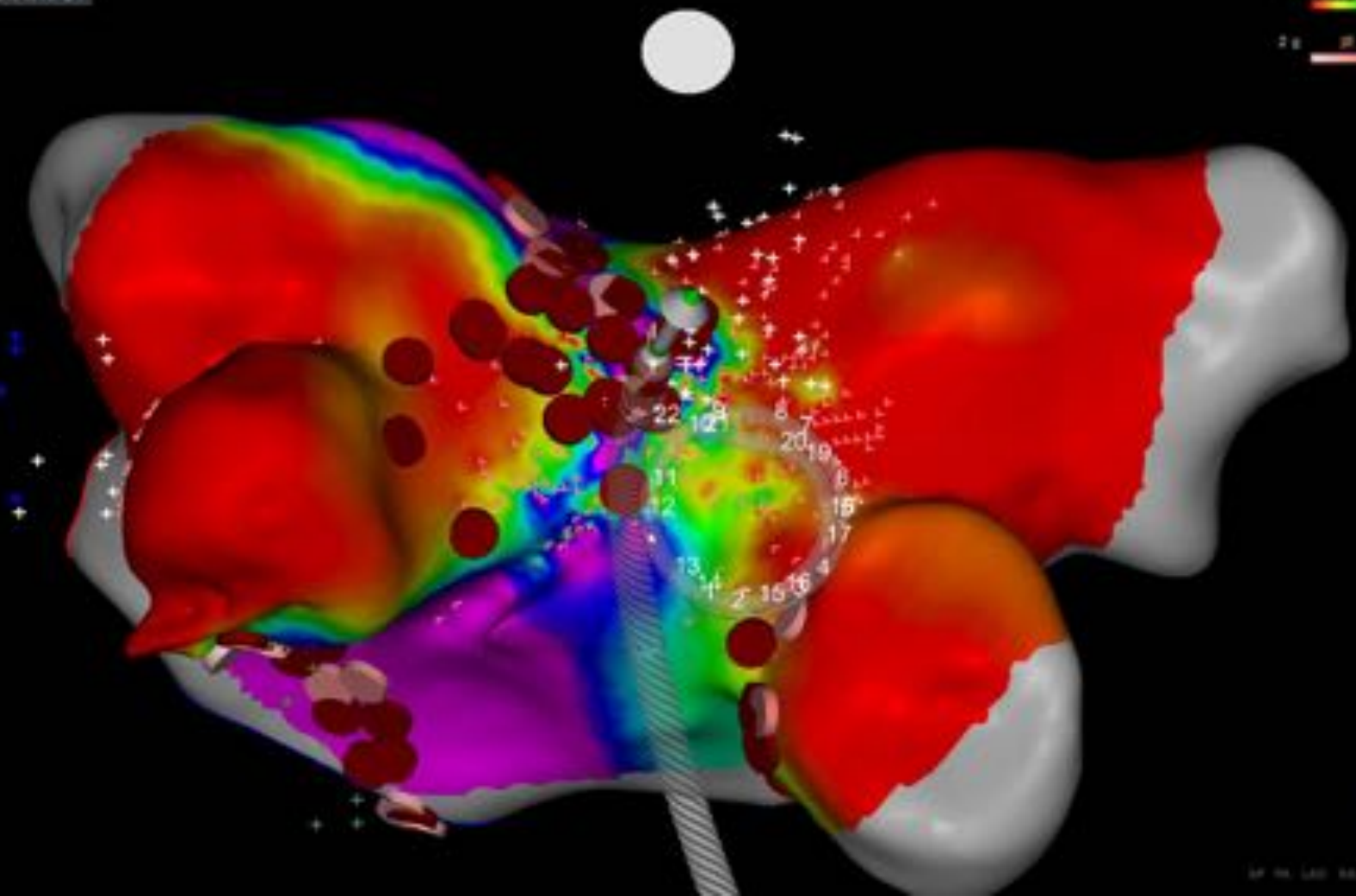
Step 3: Electrical Cardioversion and  
Electroanatomical Substrate Mapping

# Confidence CARTO High Density EAM in SR



# STEP 4 LA Posterior Wall Isolation

2-1-391A.DMS, 01.Rsq.2

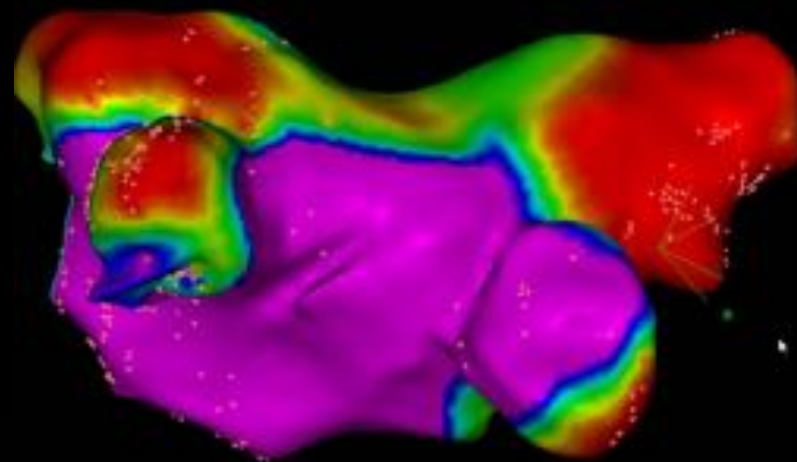


0.00 N Force 0.50 N

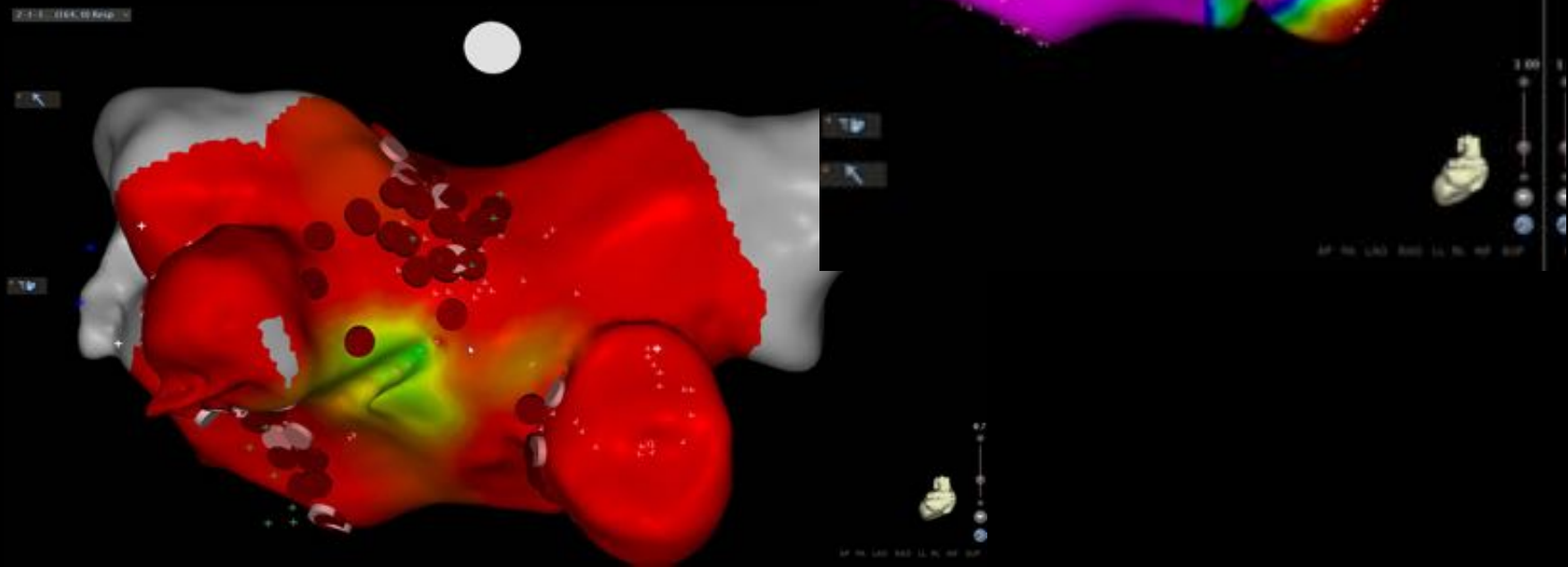


# LAPW SUBSTRATE EAM

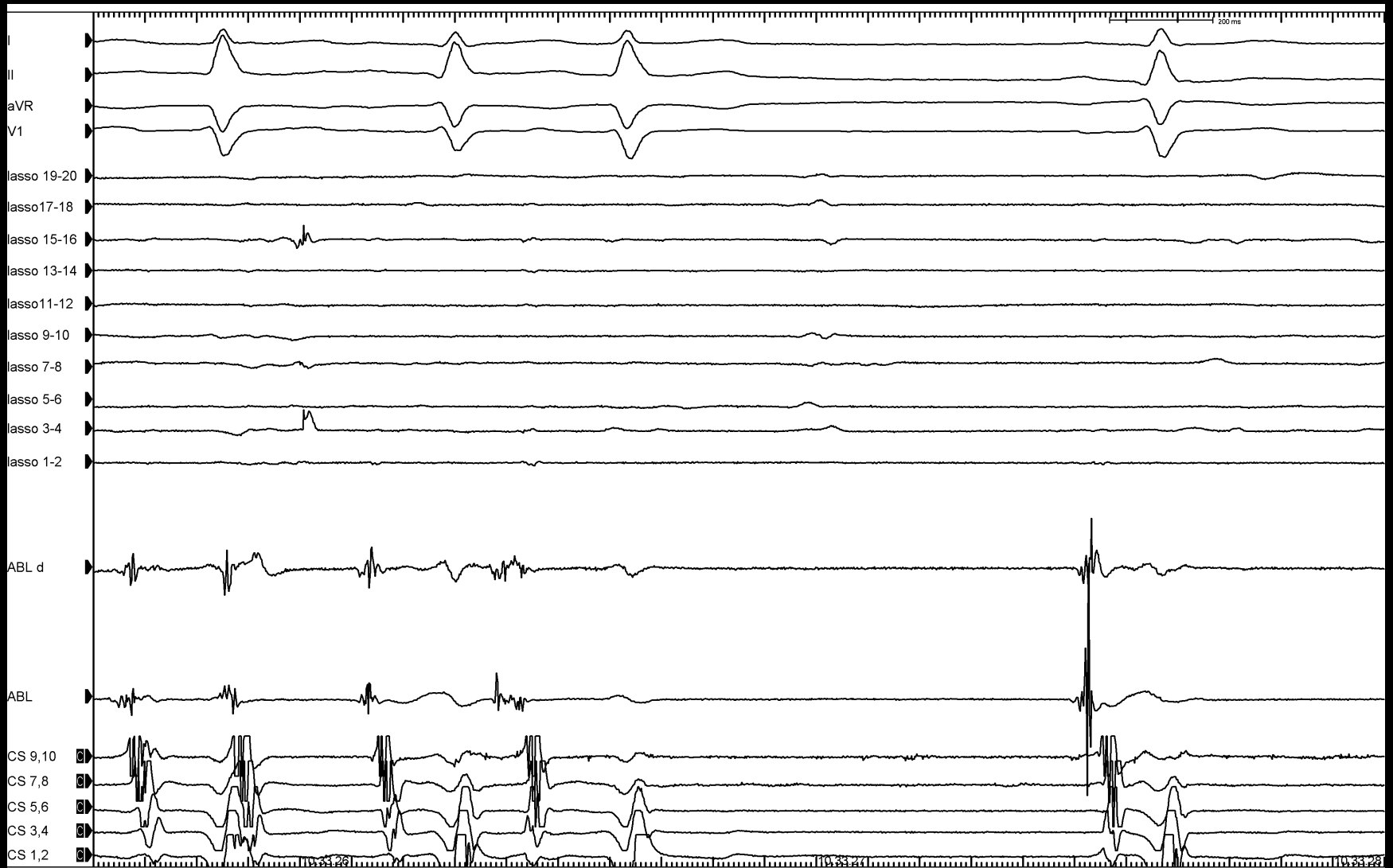
BASAL



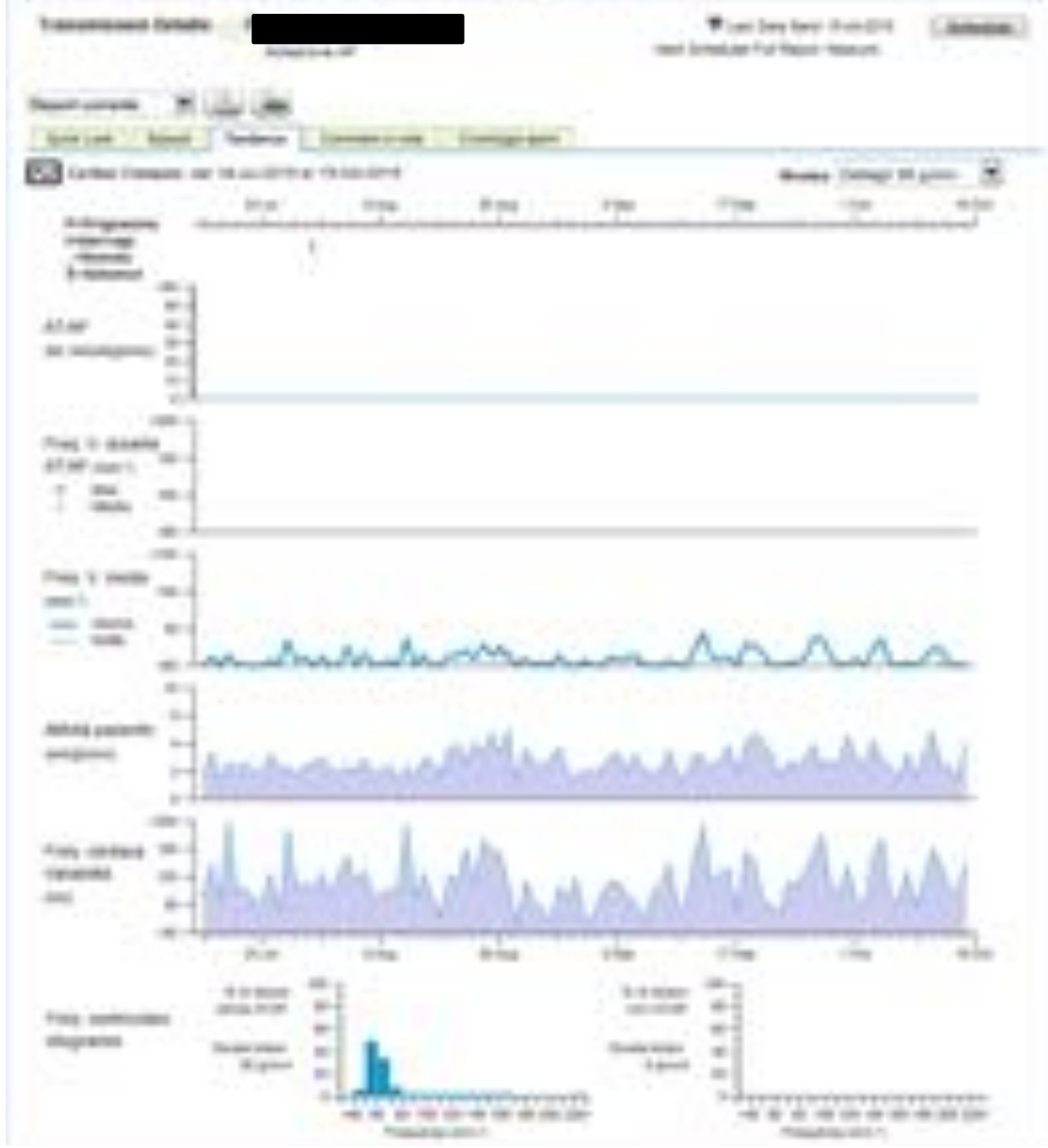
POST AF ABLATION



# Adenosine Test : No sustained AFib



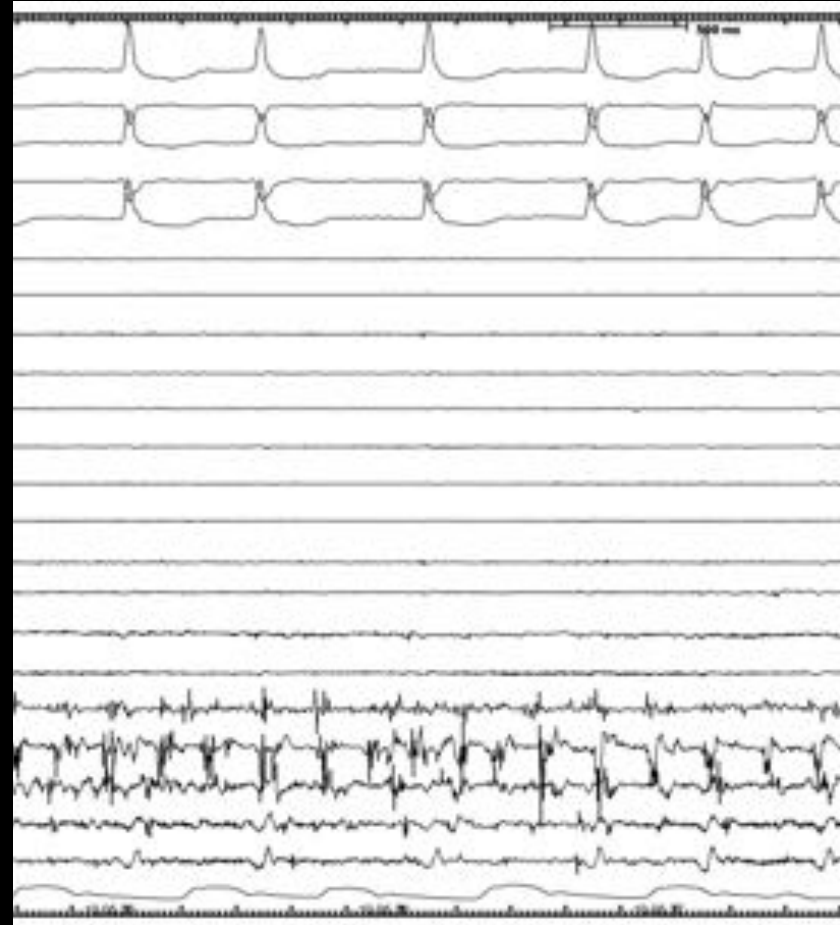
# Cardiac Compass



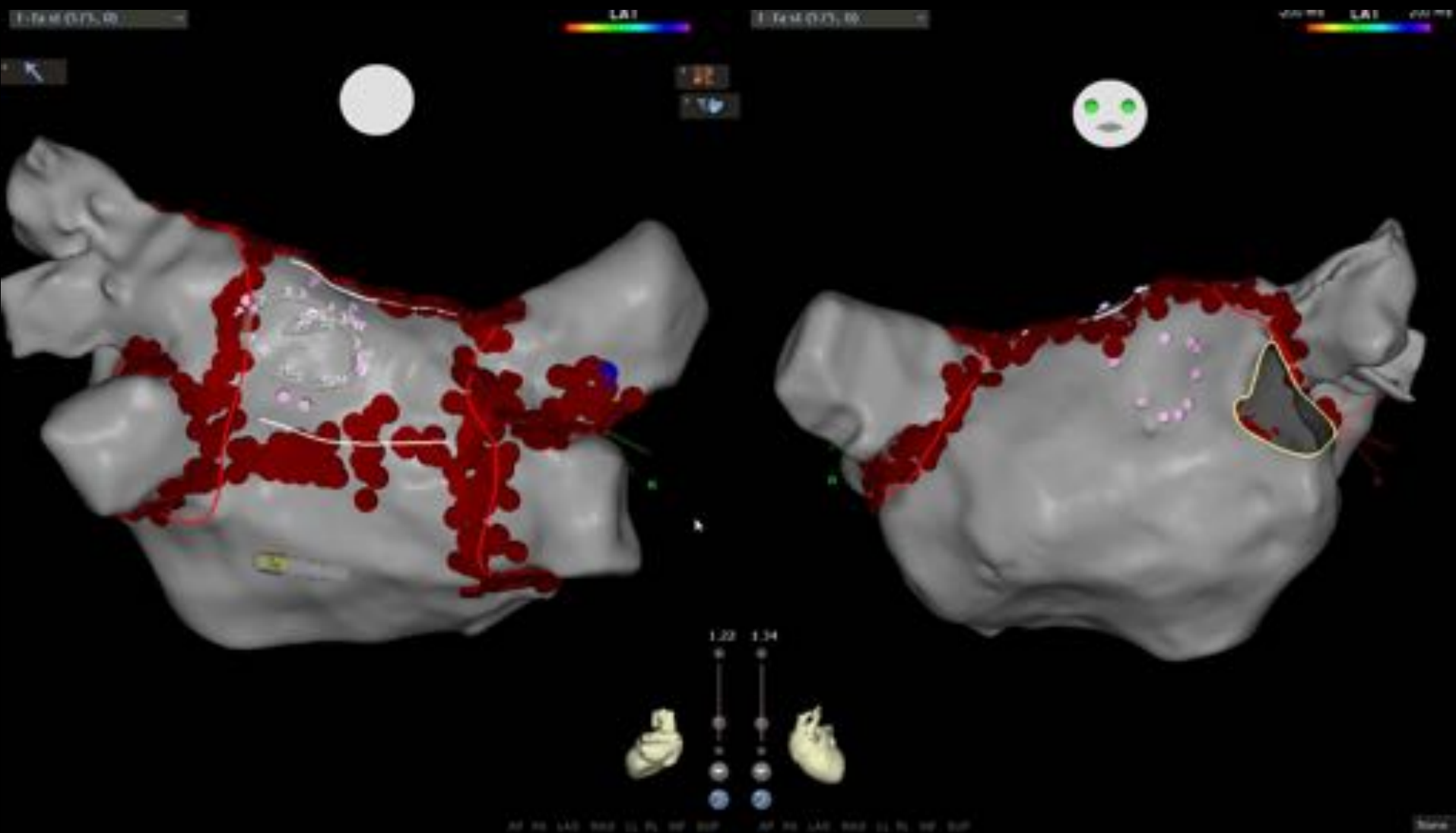
## Clinical Case 2

- M. G, ♀ 69 yrs. 2014 persistent AF
- Hypertension and PTCA (IVA and RC)
- 2007-2013 :previous Typical Atrial flutter ablation and 2 PV isolation
- EF:34%
- TEE: no thrombi

# Basal ECG

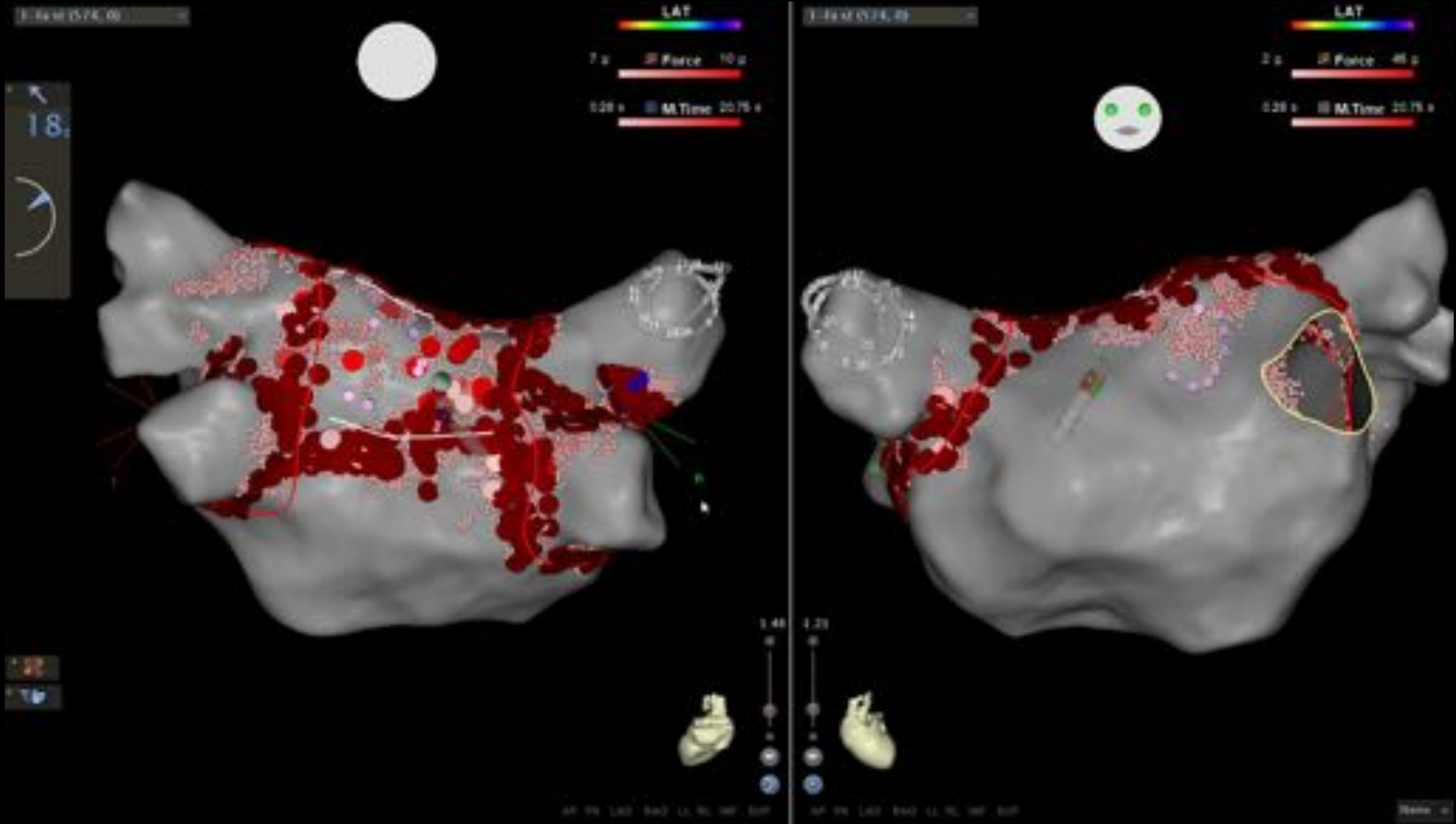


# Box lesion

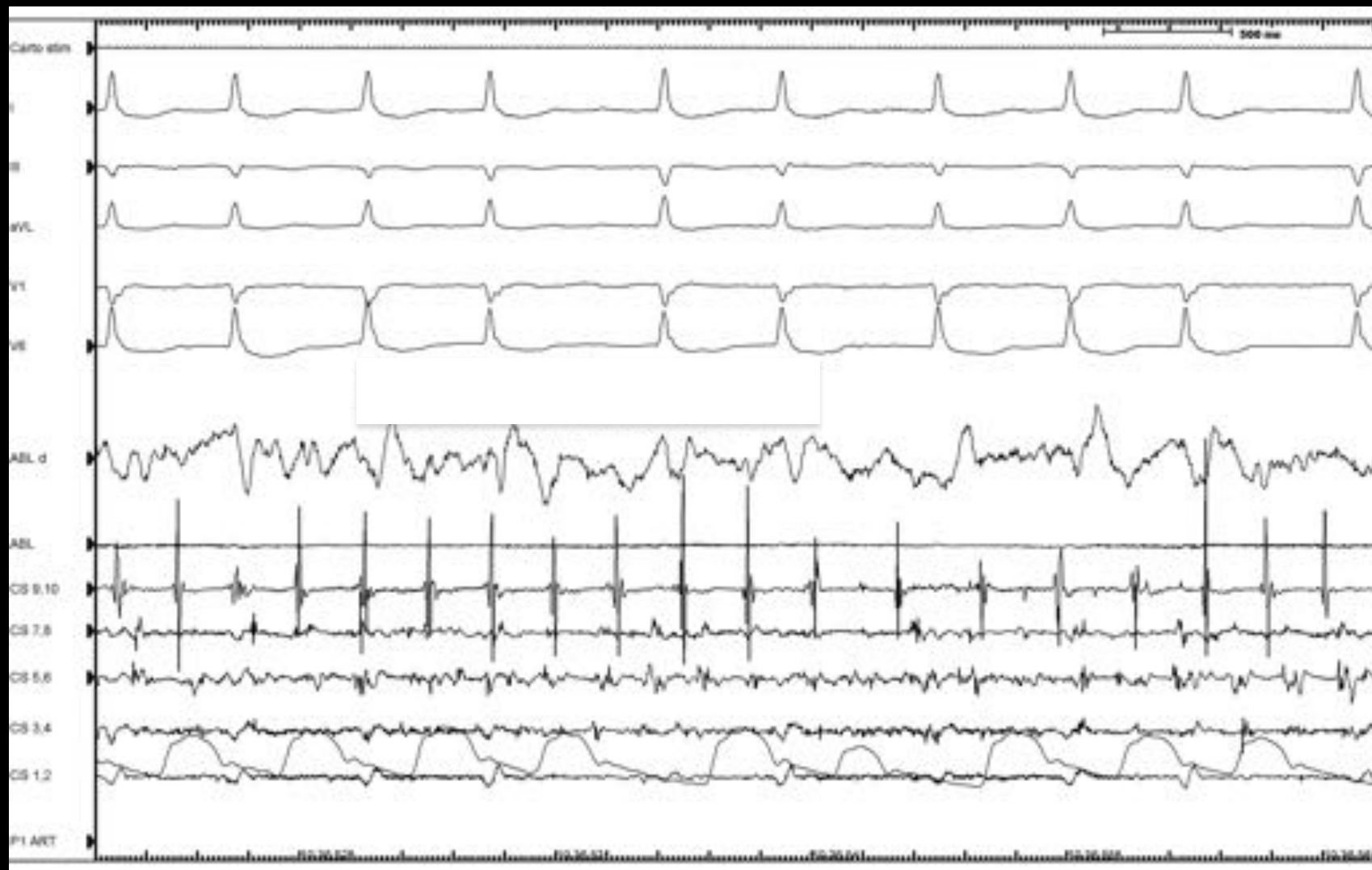




# LAPW ablation



# Atrial Tachycardia



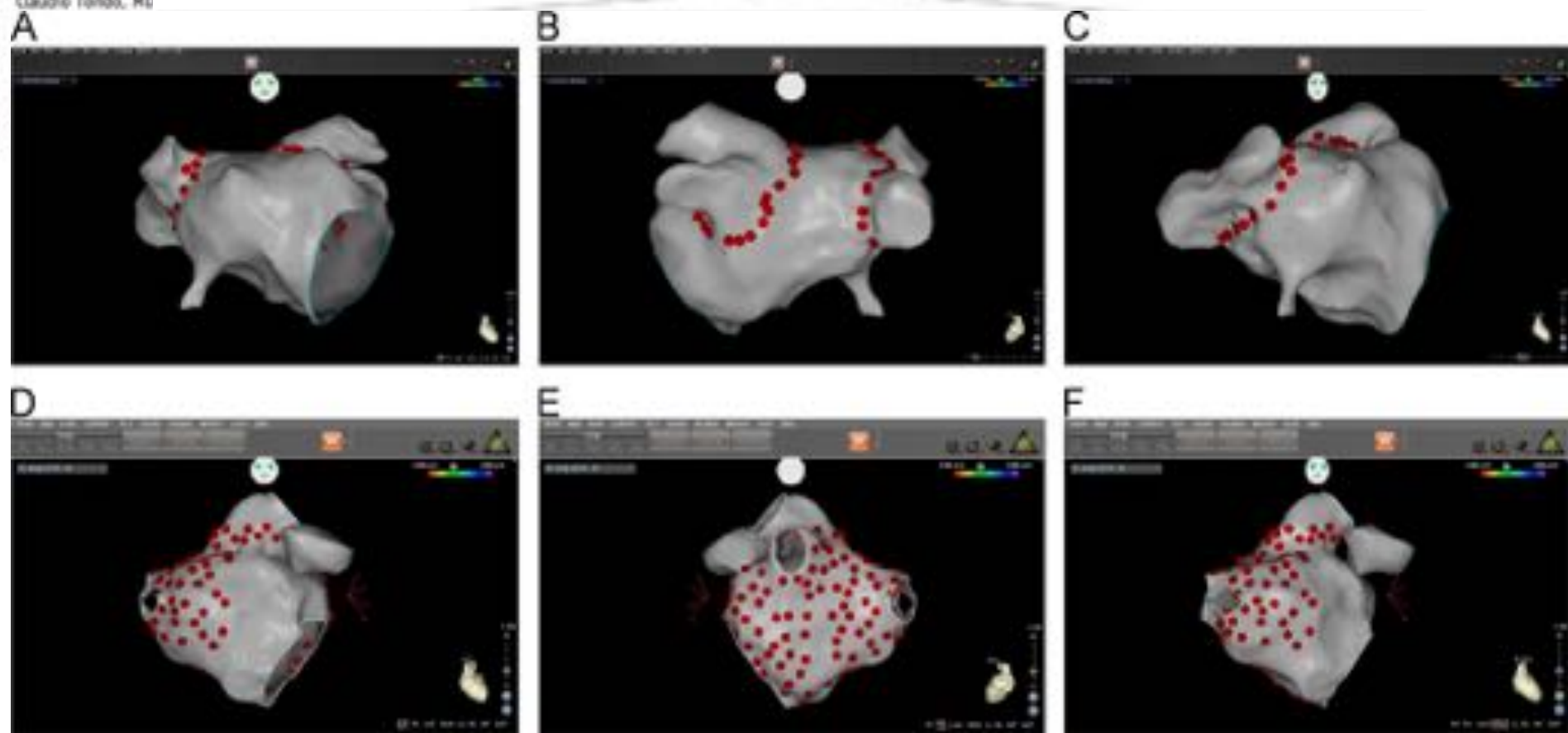
# Atrial Fibrillation Interruption



# Proven isolation of the pulmonary vein antrum with or without left atrial posterior wall isolation in patients with persistent atrial fibrillation

Rong Bai, MD, FHRS, FESC,<sup>1</sup> Luigi Di Biase, MD, PhD, FHRS, FACC,<sup>2,3,4</sup>  
Prasant Mohanty, MBBS, MPH,<sup>5</sup> Chintan Trivedi, MD,<sup>6</sup> Antonio Della Russo, MD,<sup>7</sup>  
Sakis Themistoclakis, MD,<sup>8</sup> Michela Casella, MD,<sup>9</sup> Pietro Santarelli, MD,<sup>10</sup>  
Gaetano Fassini, MD,<sup>1</sup> Pasquale Santarelli, MD,<sup>11</sup> Santhambra Mohanty, MD, FHRS,<sup>12</sup>  
Antonio Rossillo,<sup>1</sup>  
Joseph Gallagher,  
Claudio Tondo, MD

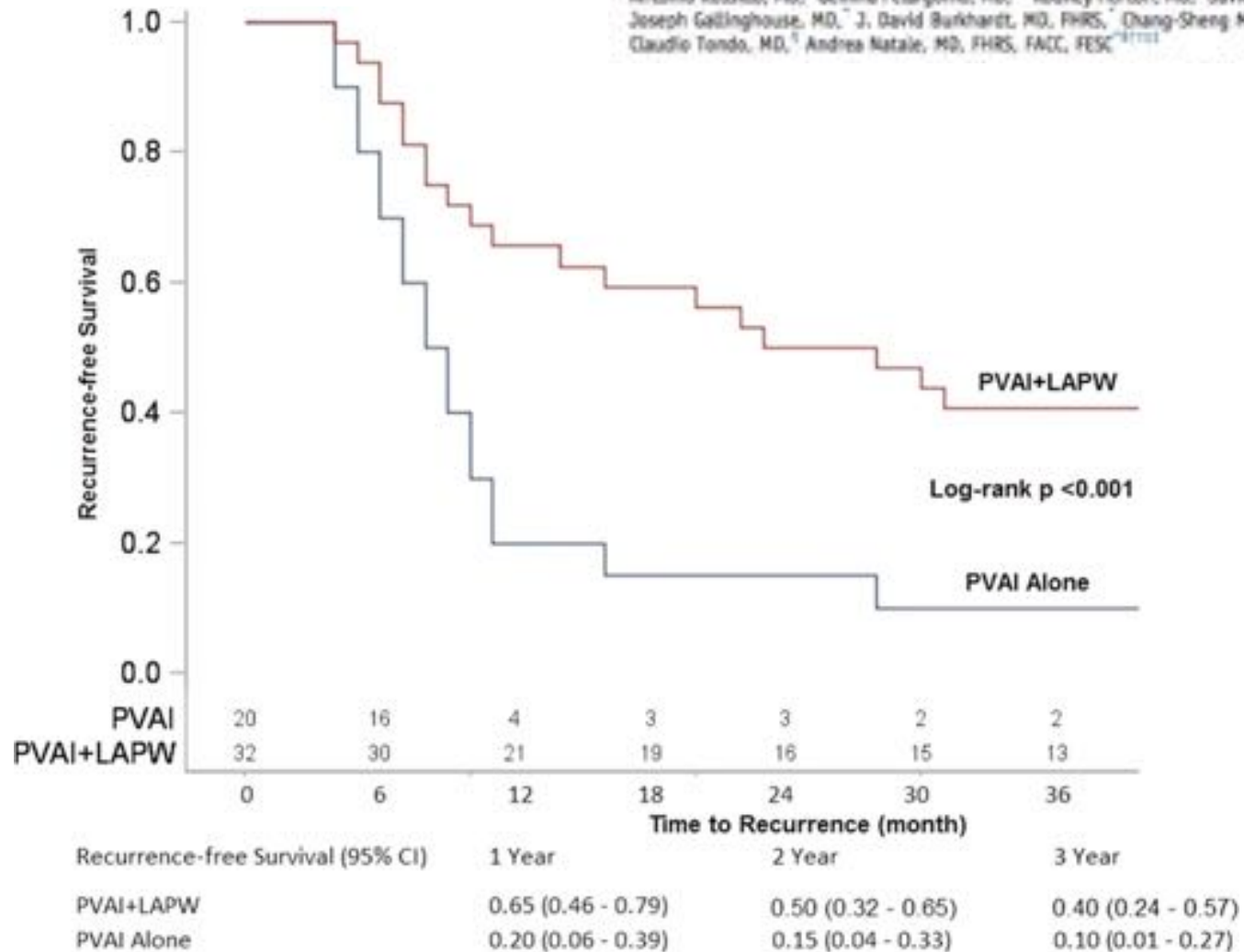
Patients with Persistent AF (N=62)



DT Procedure    DT Procedure    DT Procedure    DT Procedure

# Proven isolation of the pulmonary vein antrum with or without left atrial posterior wall isolation in patients with persistent atrial fibrillation

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 Antonio Rossillo, MD,<sup>14</sup> Gemma Pelargonio, MD,<sup>15</sup> Rodney Horton, MD,<sup>16</sup> Javier Sanchez, MD,<sup>17</sup>  
 Joseph Gallagher, MD,<sup>18</sup> J. David Burkhardt, MD, FHRS,<sup>19</sup> Chang-Sheng Ma, MD, FHRS,<sup>20</sup>  
 Claudio Tondo, MD,<sup>21</sup> Andrea Natale, MD, FHRS, FACC, FESC<sup>22,23,24</sup>





# Conclusions

Permanent isolation of the LAPW in addition to PVAI is associated with an improved outcome during short-term and mid-term follow-up.

The benefits of PVAI and LAPW isolation mostly come from the elimination of trigger activities.

This strategy could be very useful in complex case of atrial fibrillation ablation