

CLINICAL CASE

Lunch Fellow Session

RHYTHM, Marseille, may 2022



Raquel Adeliño

EP Fellow at Clinique Pasteur, Toulouse

Clinical case presentation:

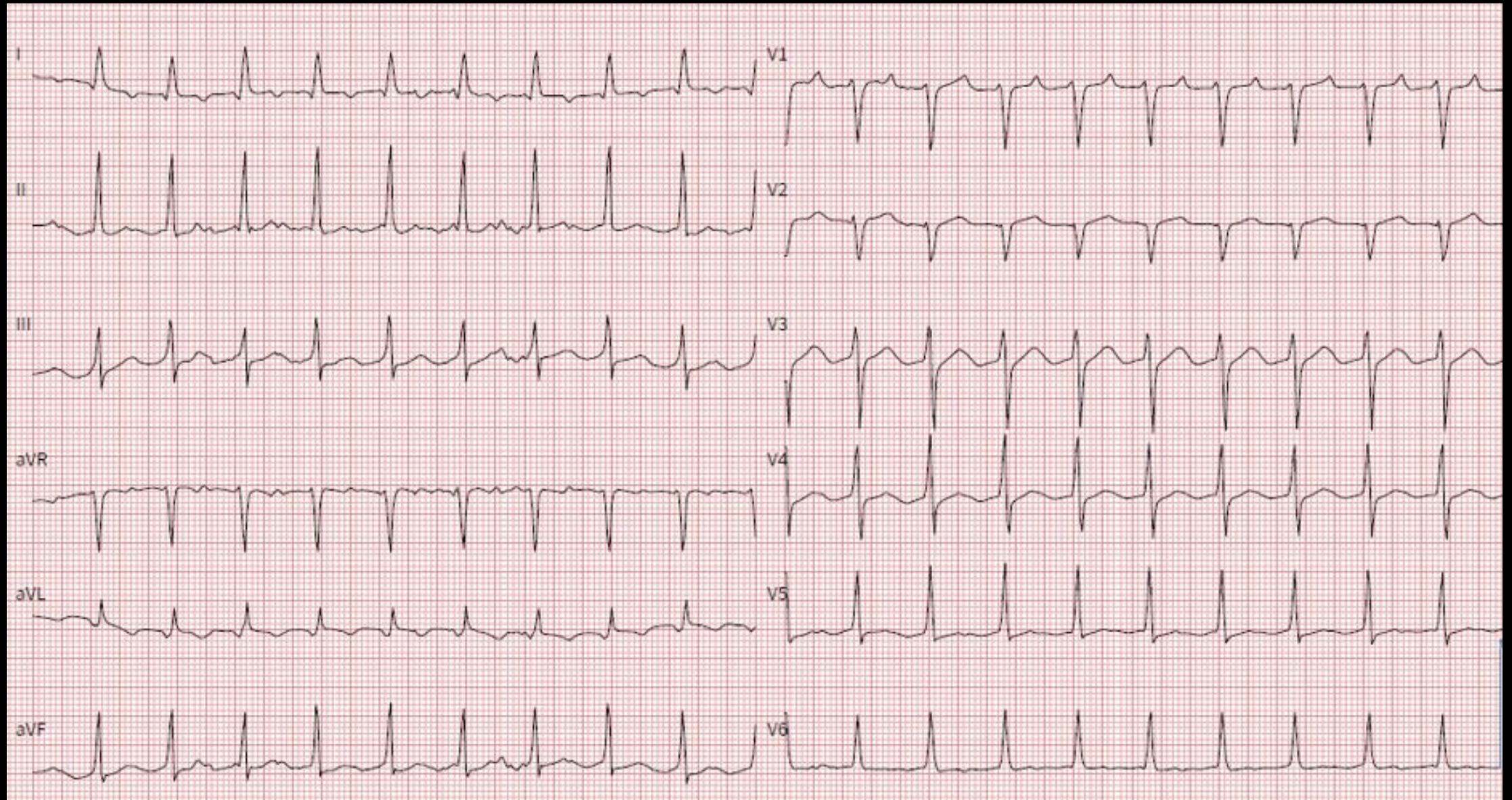
✓ 68 year-old male patient

✓ **CV risk factors:** Hypertension, diabetes, mild CKD, OSA.

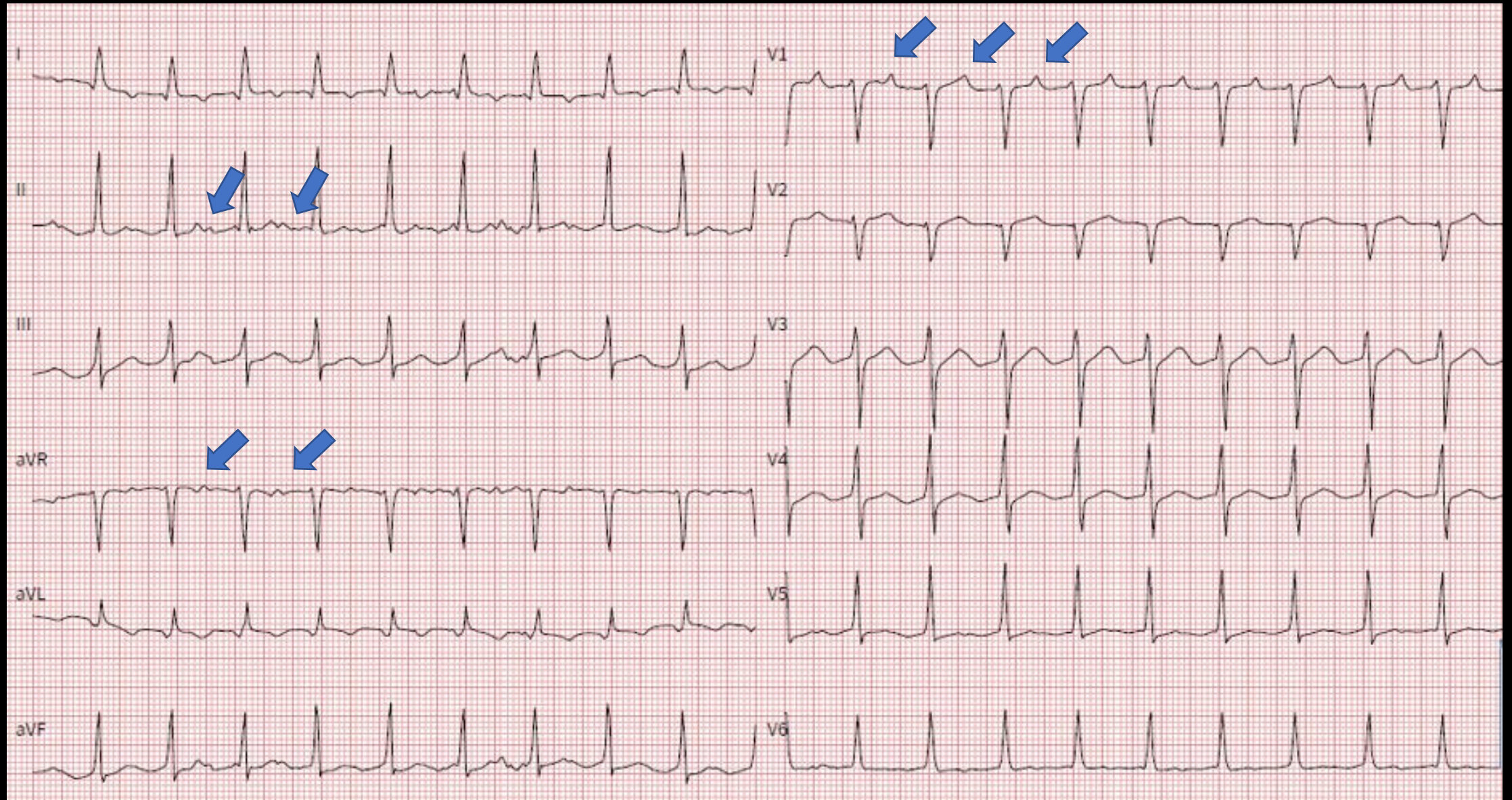
✓ **Cardiac history:**

- **Persistent AF:** DCCV in december 2021, but he presents with a recurrence one month later, so he was put under oral amiodarone and an **AF ablation procedure was scheduled.**
- ECHO: Hypertensive cardiomyopathy with normal LVEF. Moderately dilated LA.

ECG AT ADMISSION

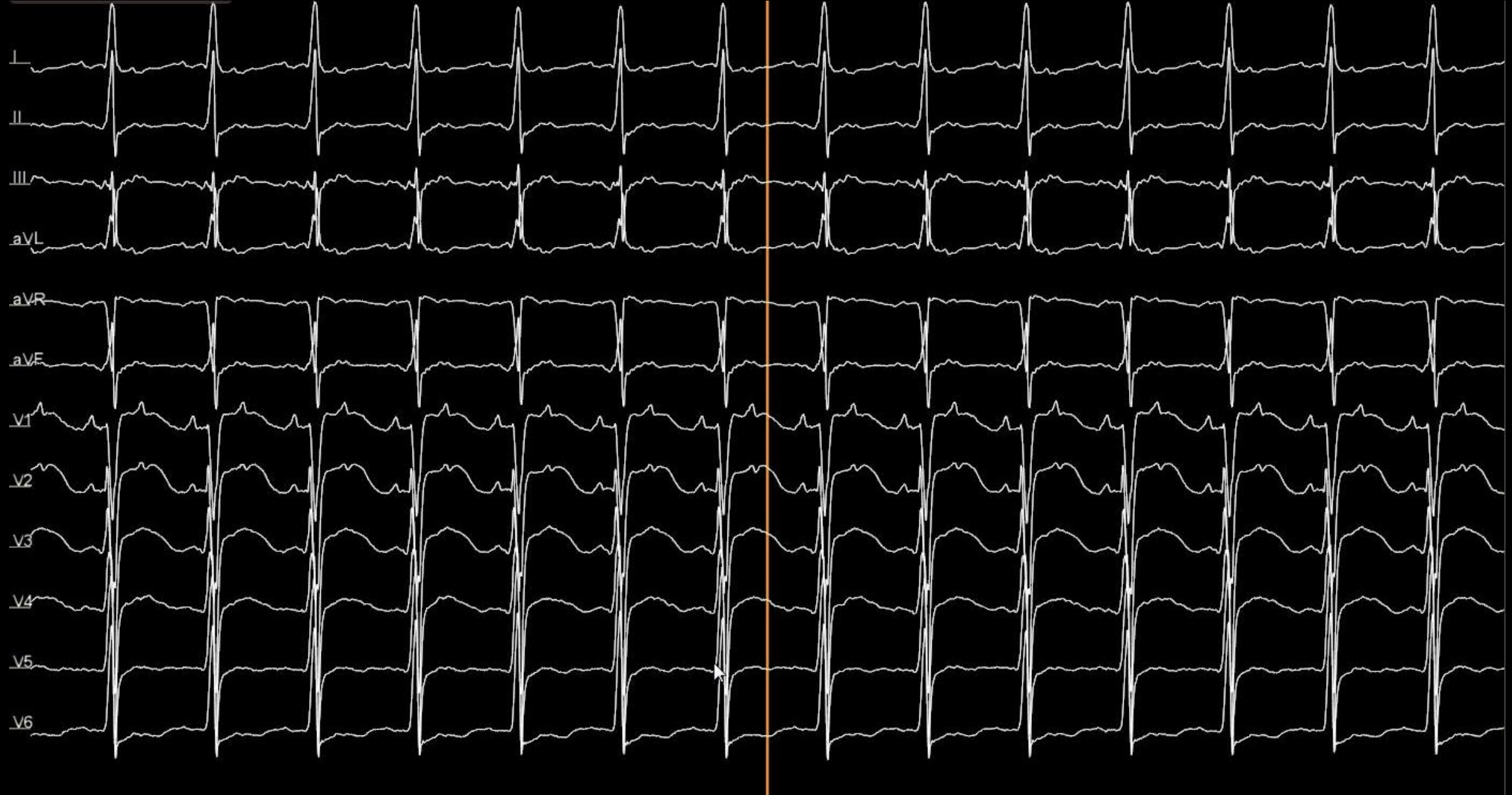


ECG AT ADMISSION

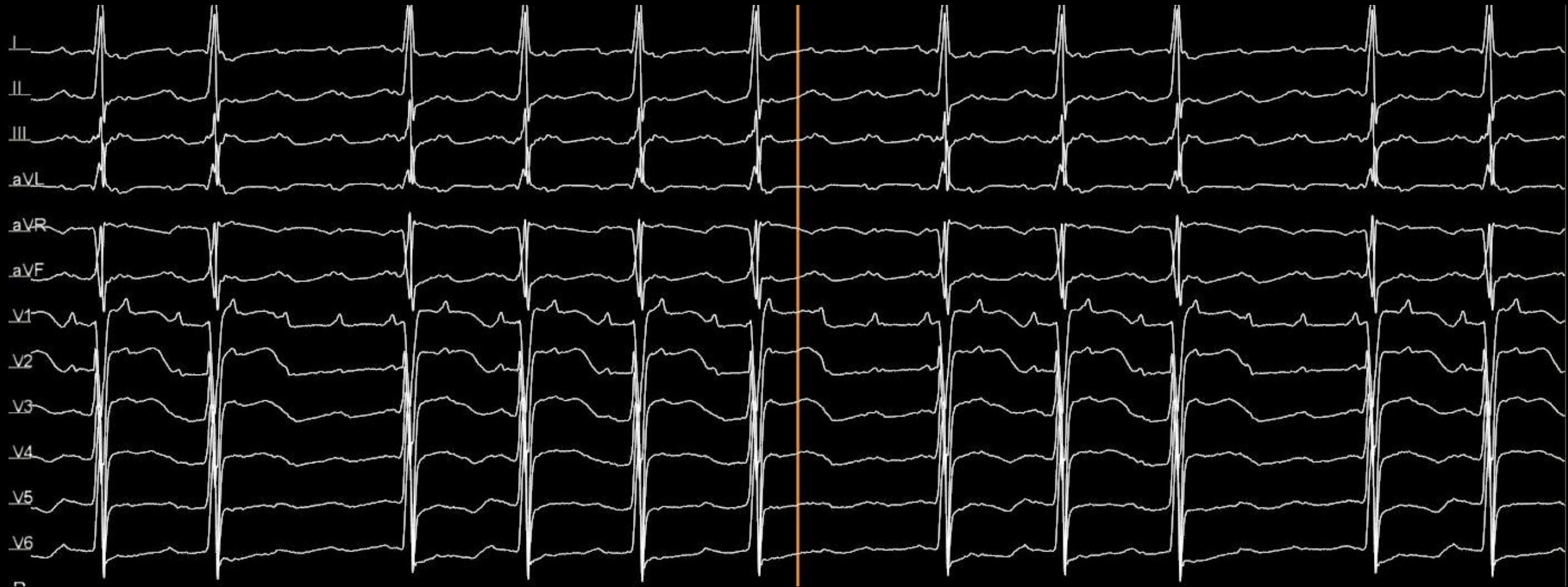


ABLATION PROCEDURE

Baseline ECG



Baseline ECG



Baseline ECG

F wave morphology:

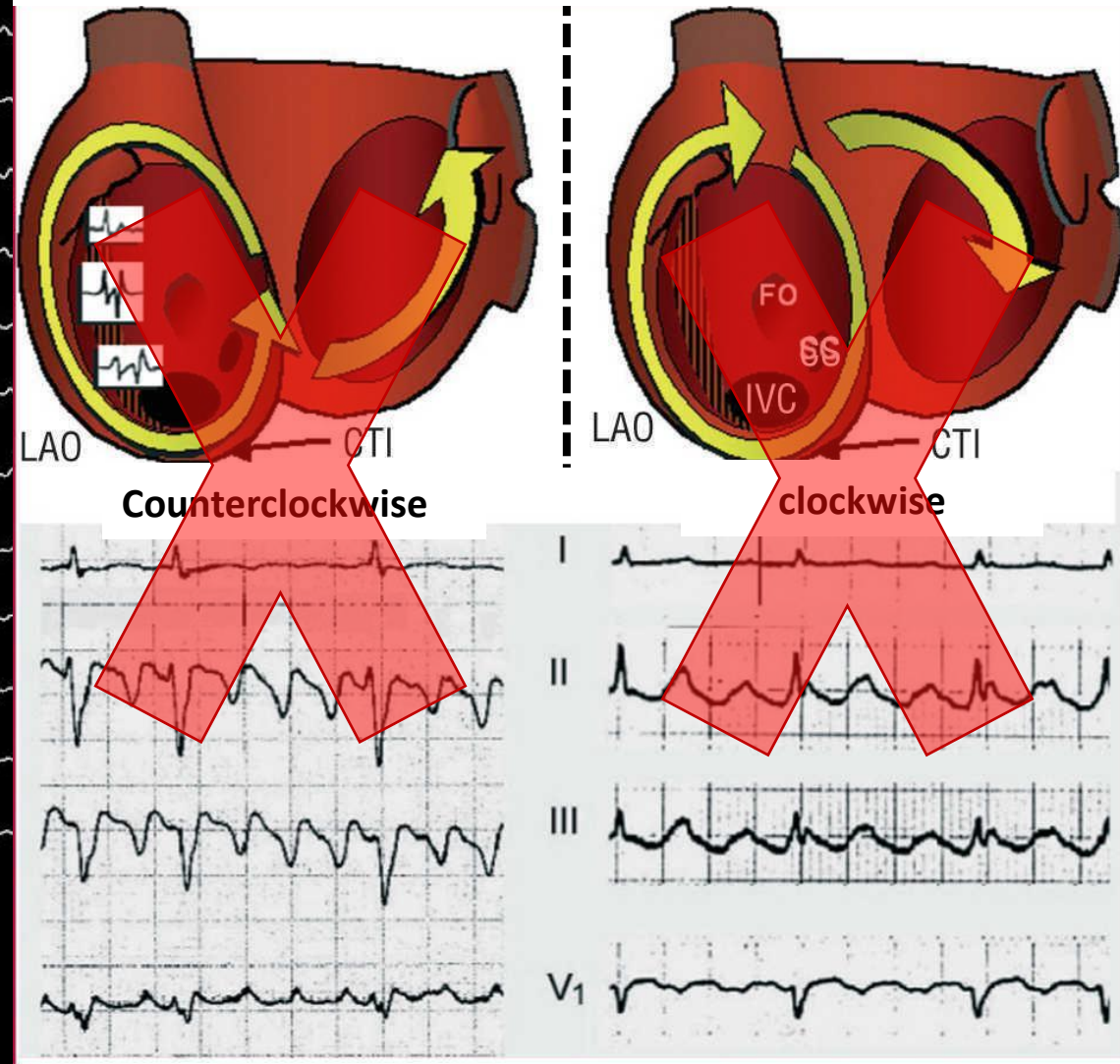
Positive in:

- Inferior leads
- All precordials leads

Isodiphasic in:

- DI and aVL (+ -)
- aVR (- +)

TYPICAL RIGHT ATRIAL FLUTTER



Baseline ECG

F wave morphology:

Positive in:

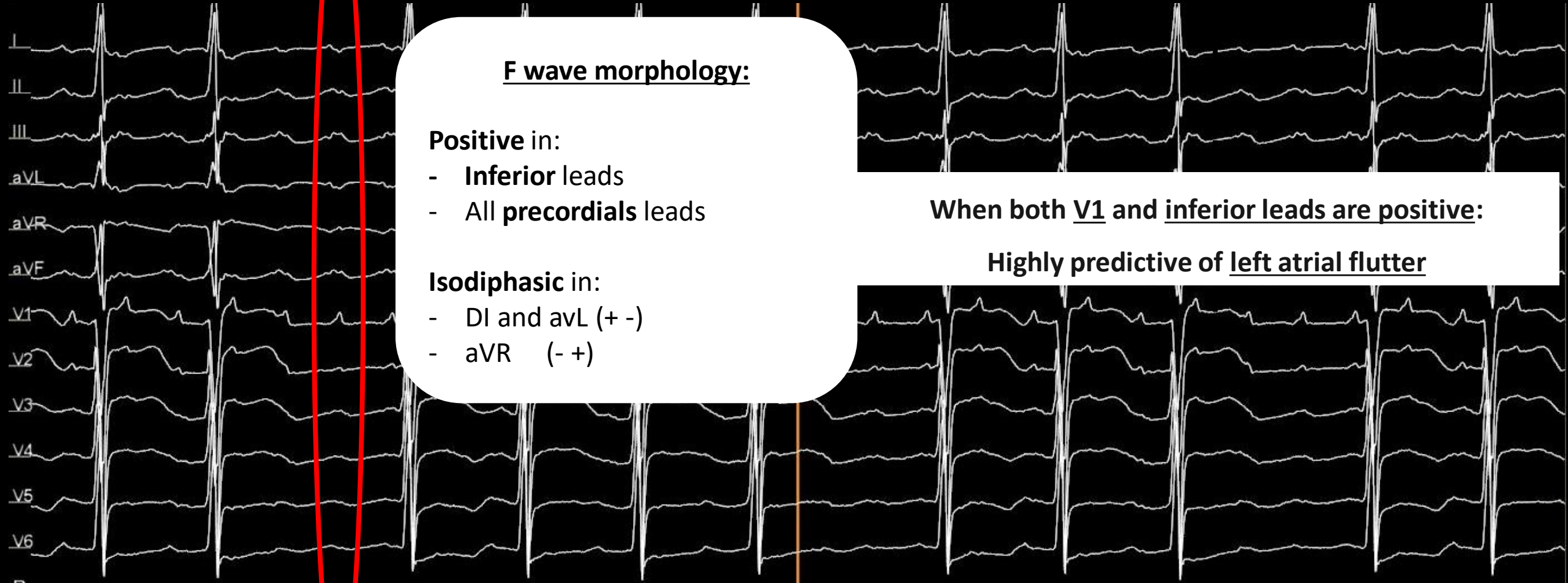
- **Inferior** leads
- All **precordials** leads

Isodiphasic in:

- DI and aVL (+ -)
- aVR (- +)

When both V1 and inferior leads are positive:

Highly predictive of left atrial flutter



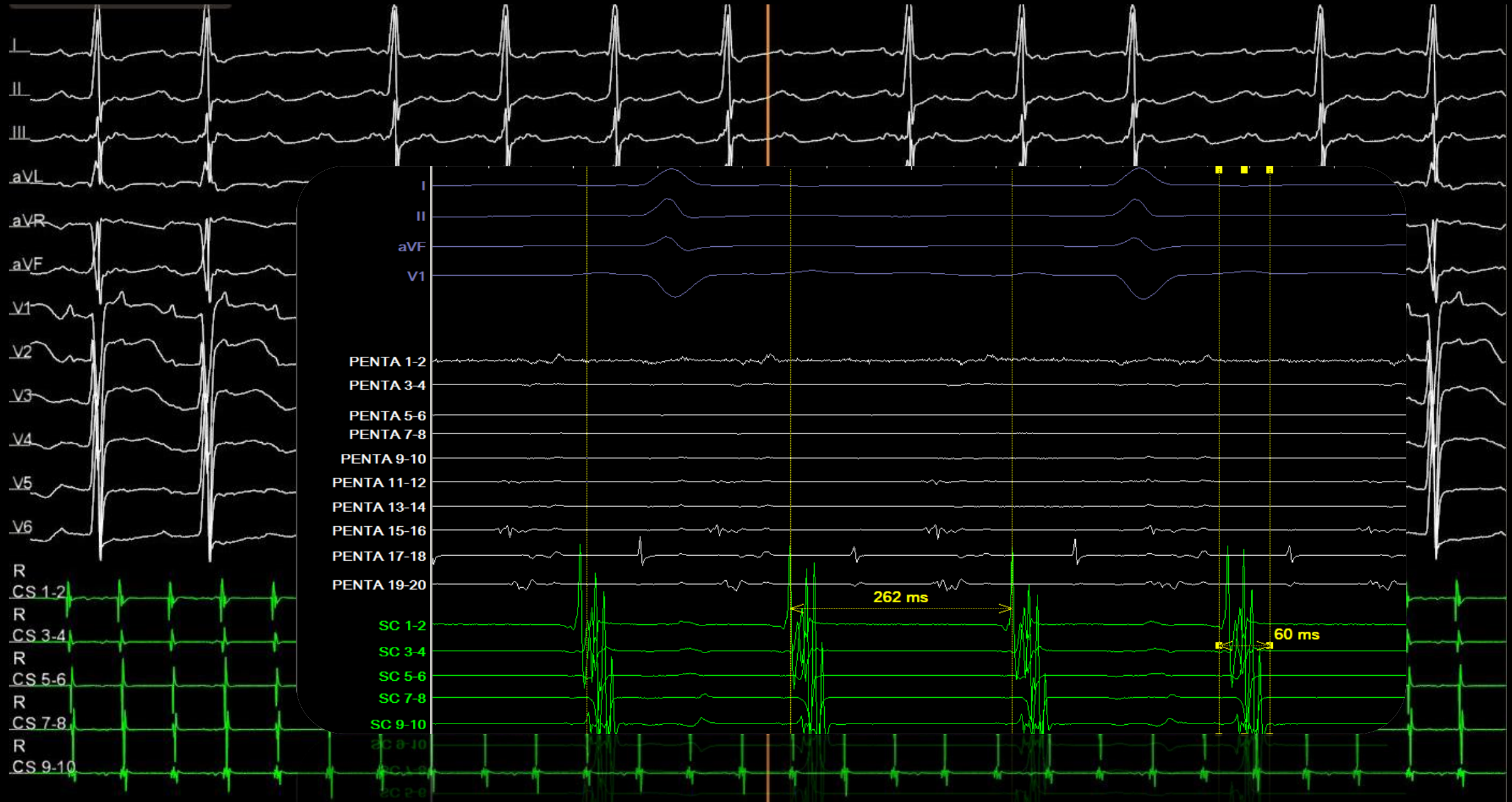
WHICH WOULD BE YOUR APPROACH FOR THIS PROCEDURE?

- 1) High-density activation mapping, starting by the right atrium (RA) before doing the transeptal.
- 2) Entrainment from both RA and LA (CS) before doing the transeptal
- 3) Perform directly the transeptal in order to perform activation mapping of the LA

WHICH WOULD BE YOUR APPROACH FOR THIS PROCEDURE?

- 1) High-density activation mapping, starting by the right atrium (RA) before doing the transeptal.
- 2) Entrainment from both RA and LA (CS) before doing the transeptal
- 3) Perform directly the transeptal in order to perform activation mapping of the LA

DECAPOLAR CATHETER IN THE CS

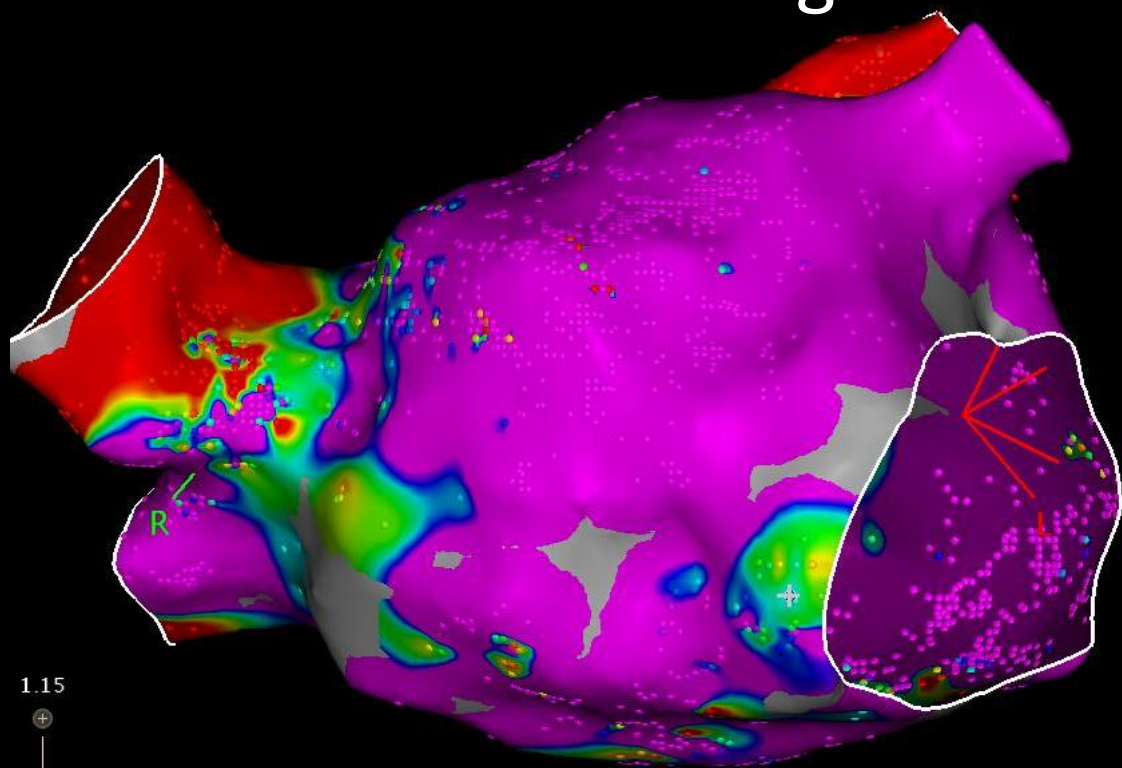


1-L (3532, 0) Resp

0.10 mV Bi 0.50 mV



LA anterior wall voltage



1.15

AP



Volume: 160.75 LAO: 0°
Cranial: 0° Swivel: 0°

0%

AP PA LAO RAO LL RL INF SUP

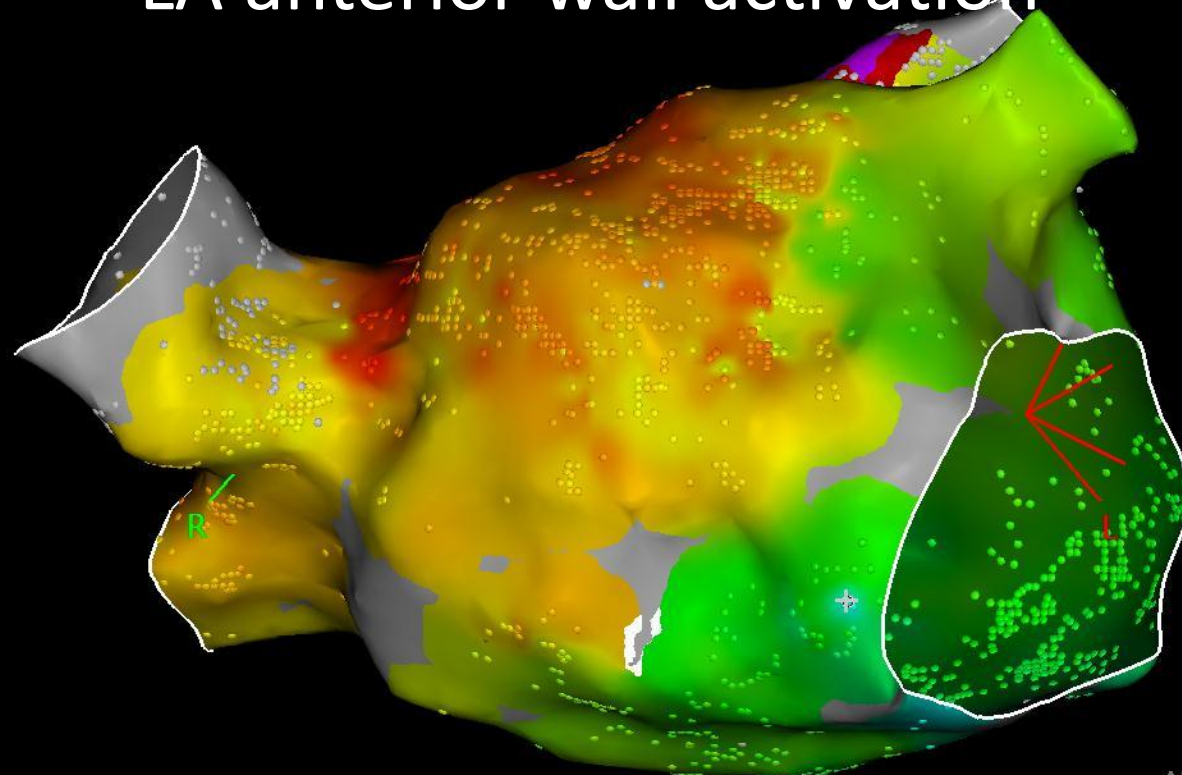
Sync



1-L (3532, 0) Resp



LA anterior wall activation



-125 ms LAT 125 ms

1.15

AP



Volume: 160.75 LAO: 0°
Cranial: 0° Swivel: 0°

0%

AP PA LAO RAO LL RL INF SUP

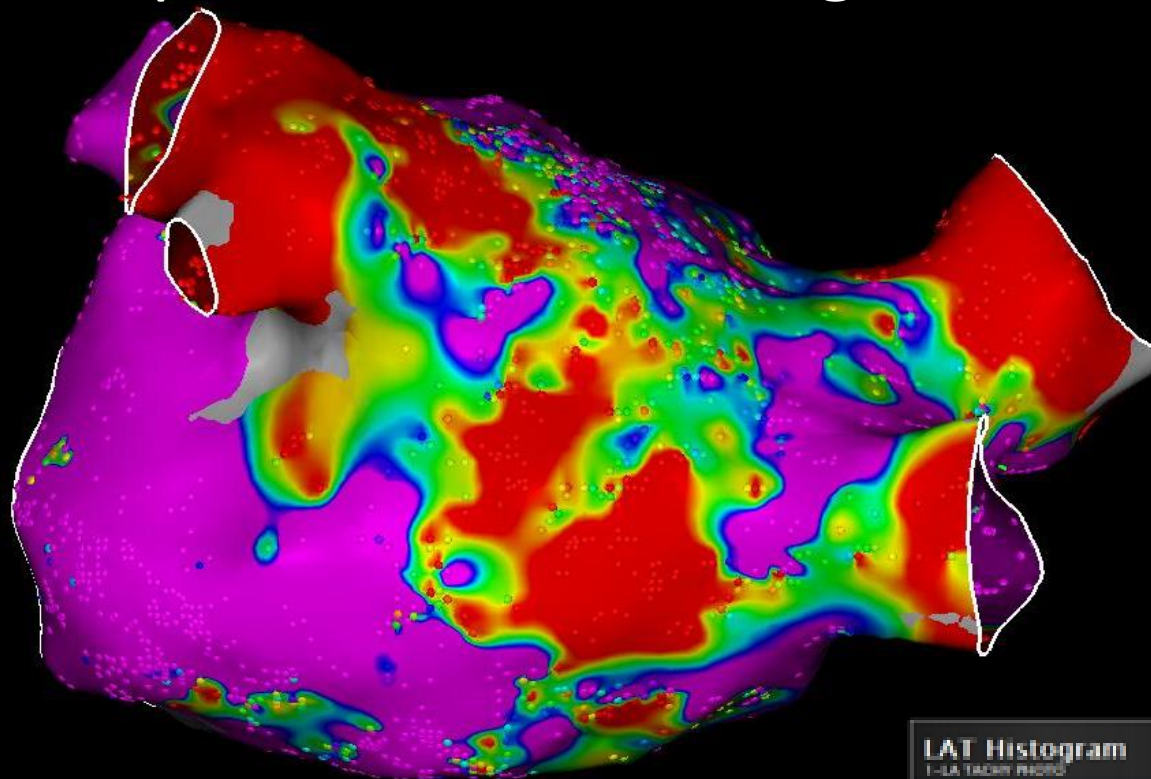
1-L_ (3532, 0) Resp

0.10 mV Bi 0.50 mV

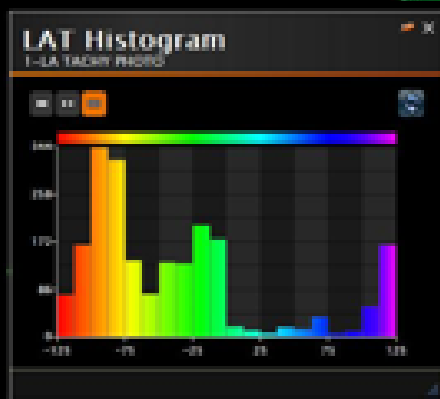
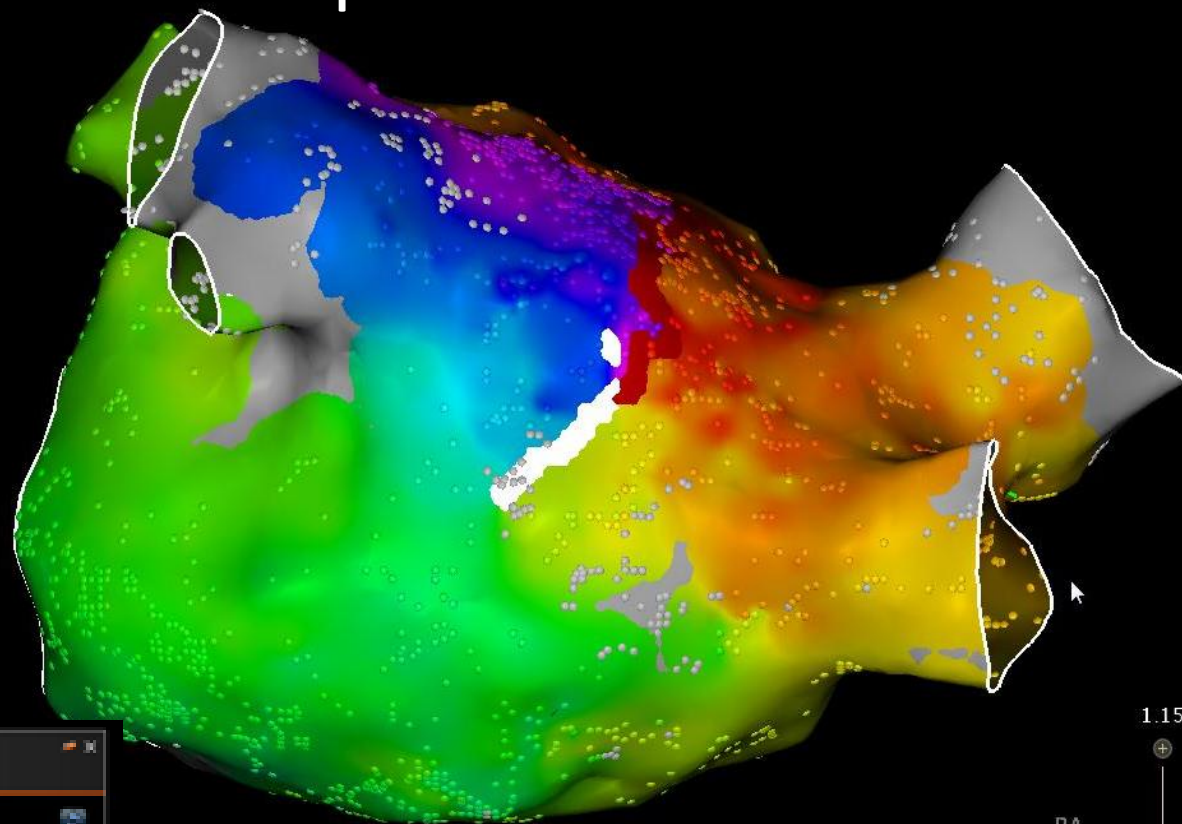
1-L_ (3532, 0) Resp

-125 ms LAT 125 ms

LA posterior wall voltage



LA posterior wall activation



1.15

PA

Volume: 160.75 LAO: 180°
Cranial: 0° Swivel: 0°

0%

AP PA LAO RAO LL RL INF SUP

1.15

PA

Volume: 160.75 LAO: 180°
Cranial: 0° Swivel: 0°

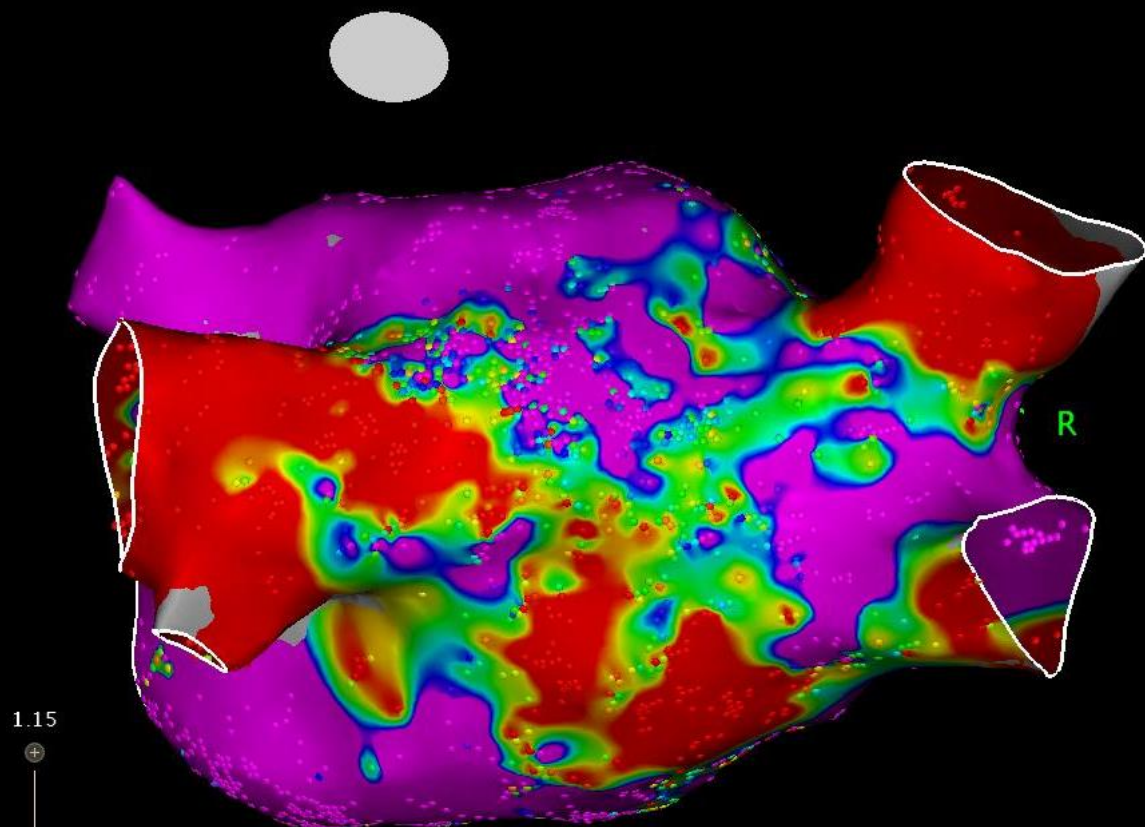
0%

AP PA LAO RAO LL RL INF SUP

1-L... (3532, 0) Resp

0.10 mV Bi 0.50 mV

LA roof voltage



1.15



Volume: 160.75 RAO: 157 °
Cranial: 36 ° Swivel: 28 °

0%

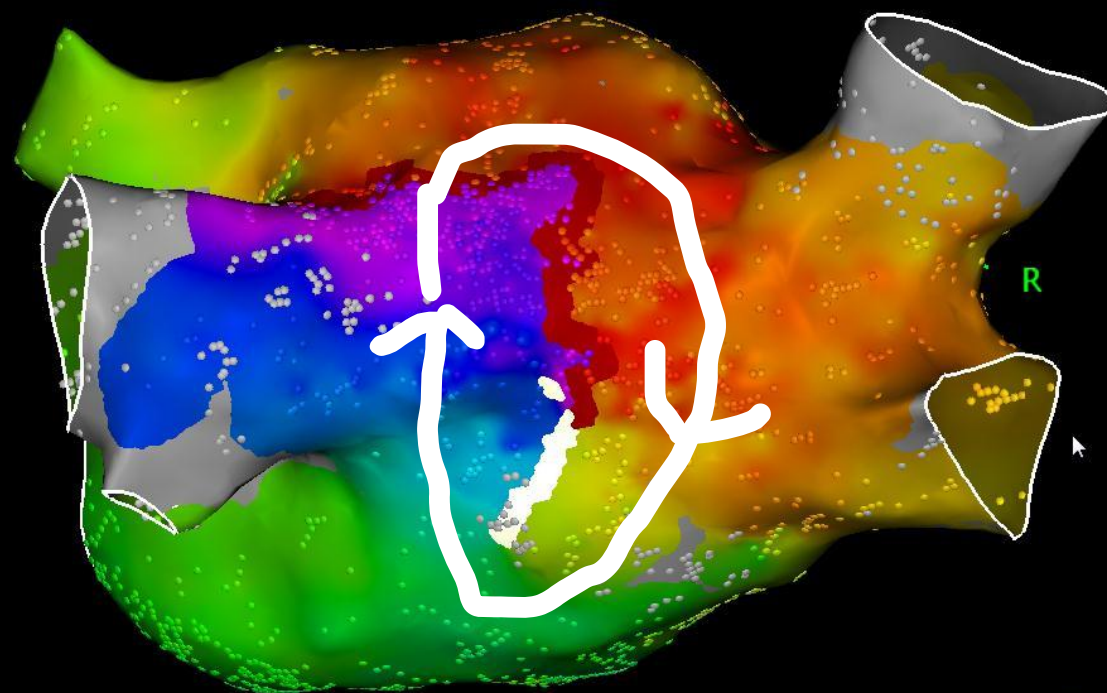
AP PA LAO RAO LL RL INF SUP

Sync

1-L... (3532, 0) Resp

-125 ms LAT 125 ms

LA roof activation



1.15



Volume: 160.75 RAO: 157 °
Cranial: 36 ° Swivel: 28 °

0%

AP PA LAO RAO LL RL INF SUP

1-L (3530, 0) Resp

-124 ms LAT 122 ms

257 34 Loc 0.26 N/A N/A N/A
CL LAT (ms) Bi (mV) μ Bi (mV) Imp (Ω) Force (g)



Volume: 160.75 RAO: 165°
Cranial: 13° Swivel: 14°

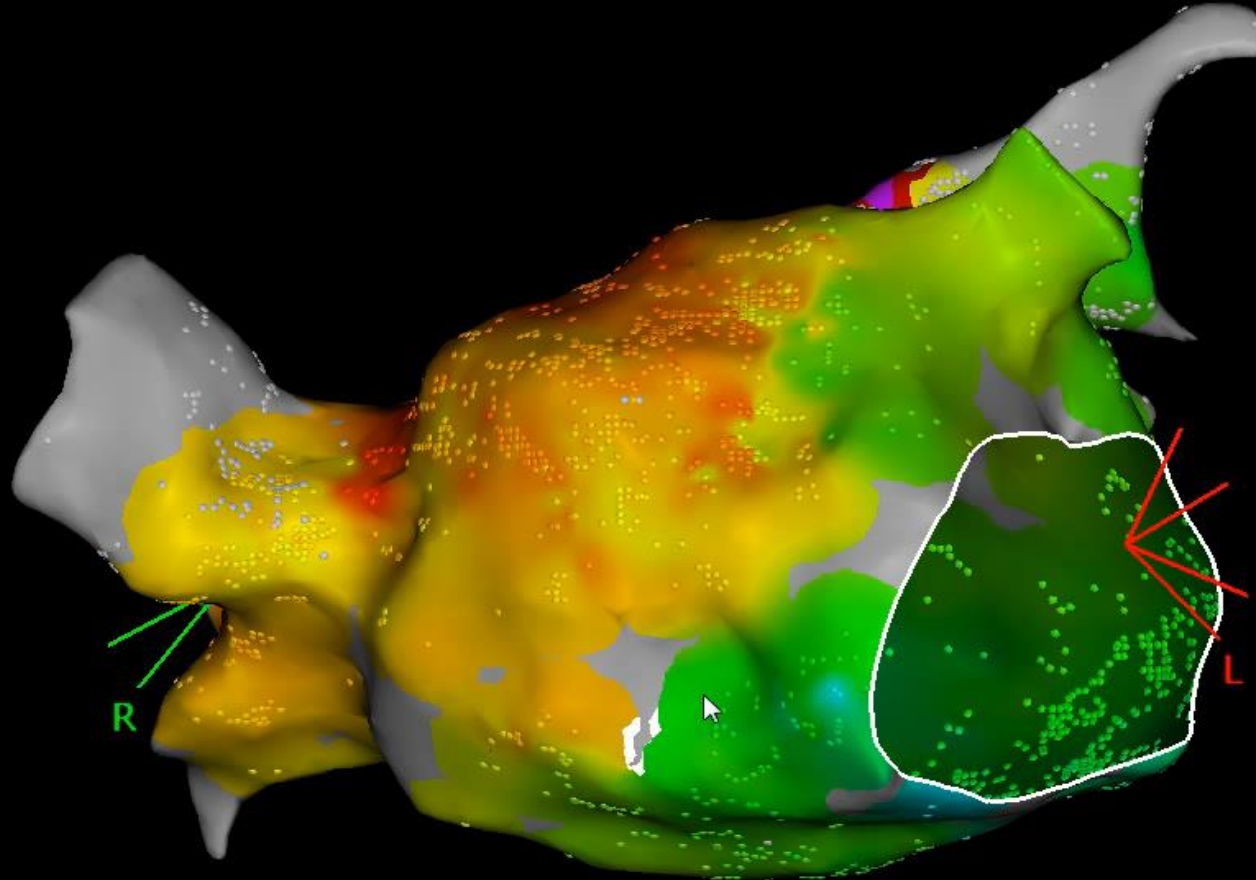
0%

AP PA LAO RAO LL RL INF SUP

1-L... (3530, 0) Resp



-125 ms LAT 125 ms



1.39

Volume: 160.75 LAO: 7 °
Caudal: 3 ° Swivel: 2 °



0%

AP PA LAO RAO LL RL INF SUP

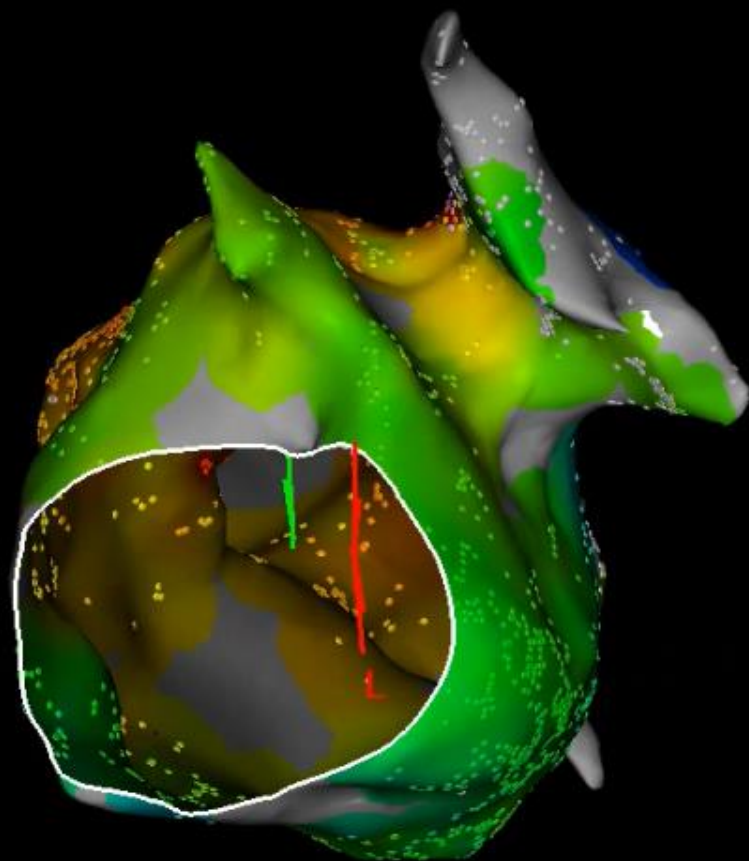


(3530, 0) Resp

-125 ms LAT 125 ms

Resp

-125 ms LAT 125 ms



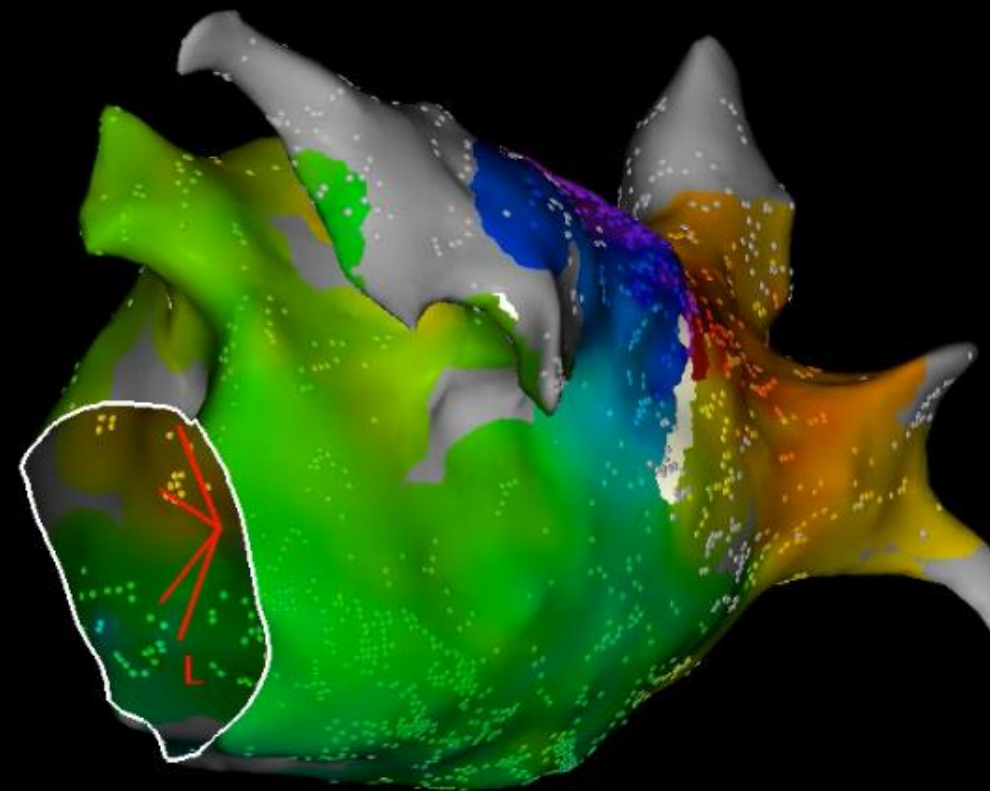
Volume: 160.75 LAO: 86 °
Cranial: 1 ° Swivel: 2 °



1.39

0%

AP PA LAO RAO LL RL INF SUP



Volume: 160.75 LAO: 123 °
Cranial: 9 ° Swivel: 4 °

0%

AP PA LAO RAO

1-L_ (3531, 0) Resp

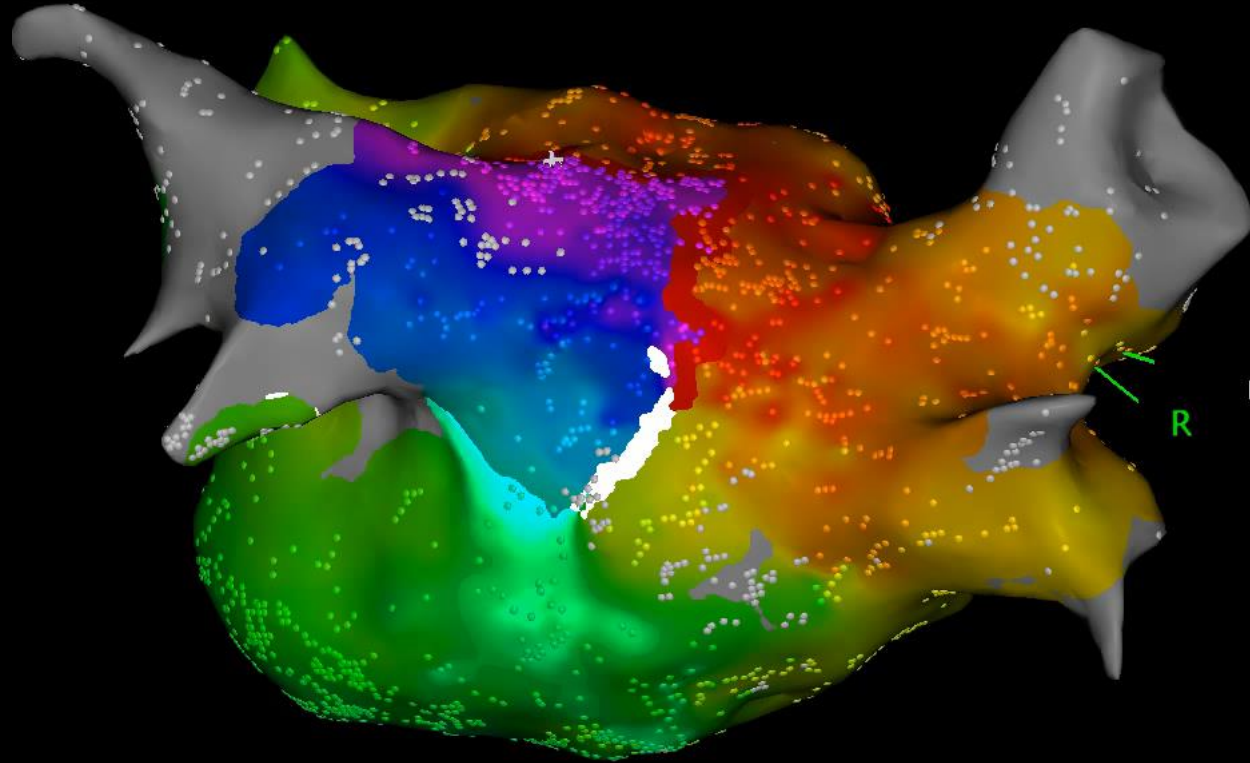
-124 ms LAT 122 ms

-14 11

x



-18.00



1.26

Volume: 160.75

RAO: 161°

Cranial: 14°

Swivel: 13°



0%

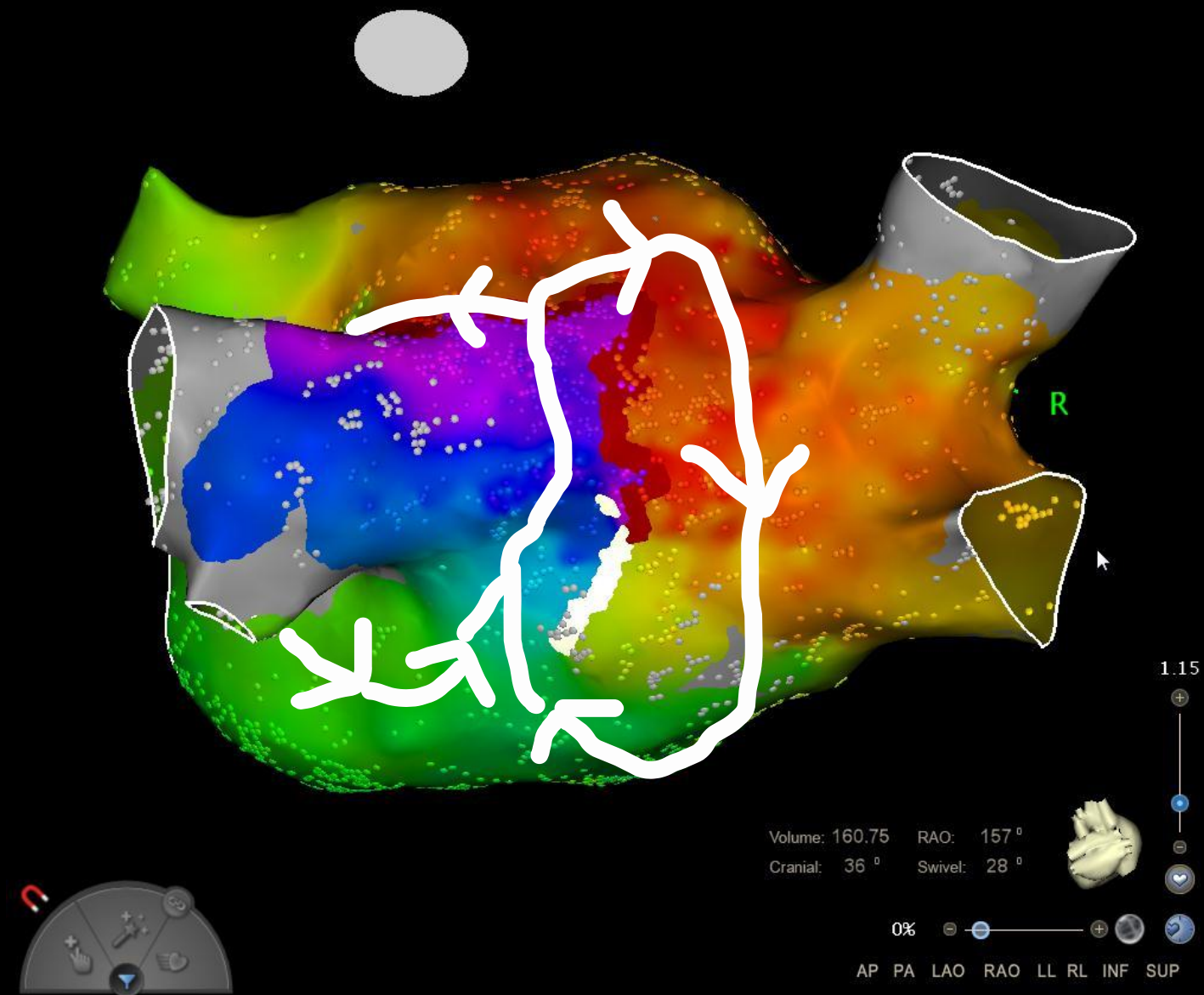
AP PA LAO RAO LL RL INF SUP



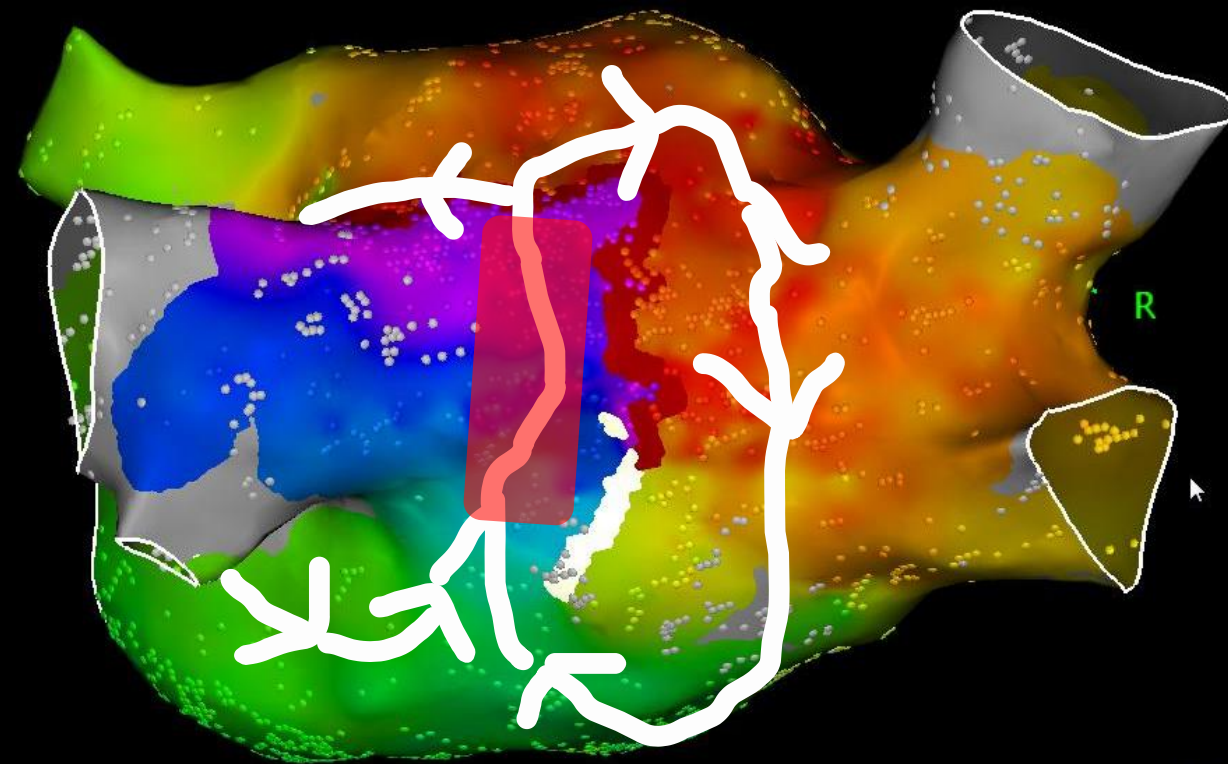
1-L... (3532, 0) Resp

-125 ms LAT 125 ms

TWO MACROREENTRANT CIRCUITS IN FIGURE OF 8



OUR ABLATION APPROACH



R

1.15

Volume: 160.75 RAO: 157°
Cranial: 36° Swivel: 28°



0%   

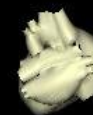
AP PA LAO RAO LL RL INF SUP





Volume: 160.75 RAO: 157°
Cranial: 36° Swivel: 28°

1.15



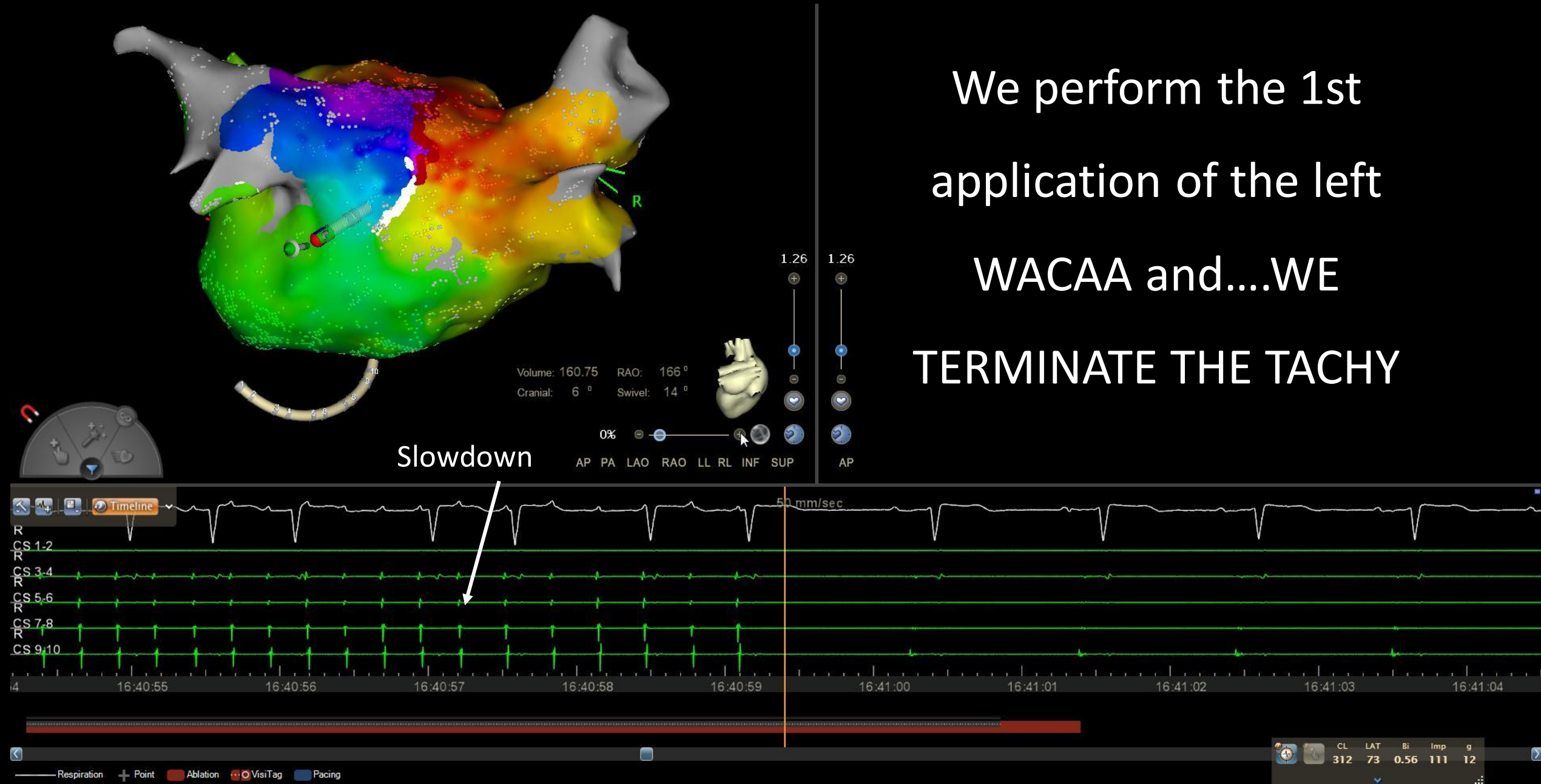
0% ———— +

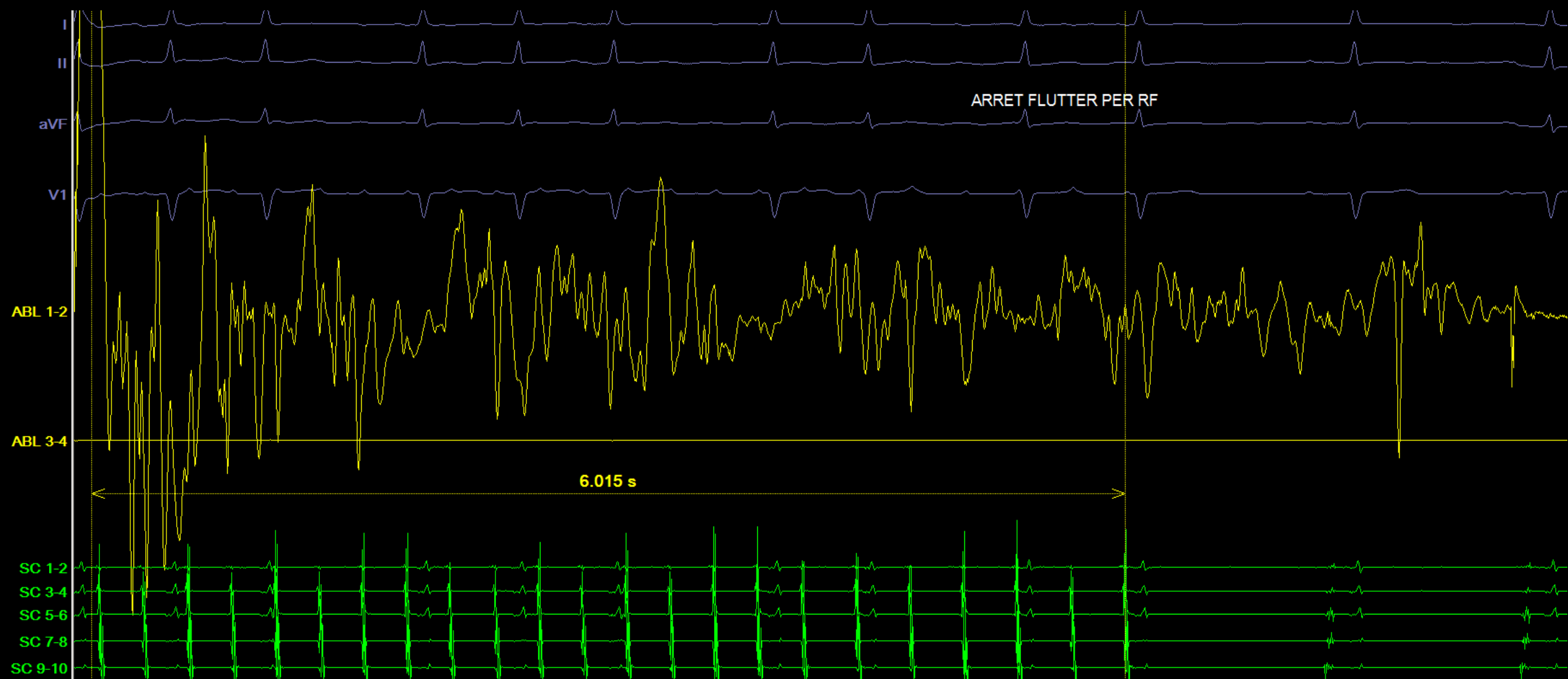
AP PA LAO RAO LL RL INF SUP

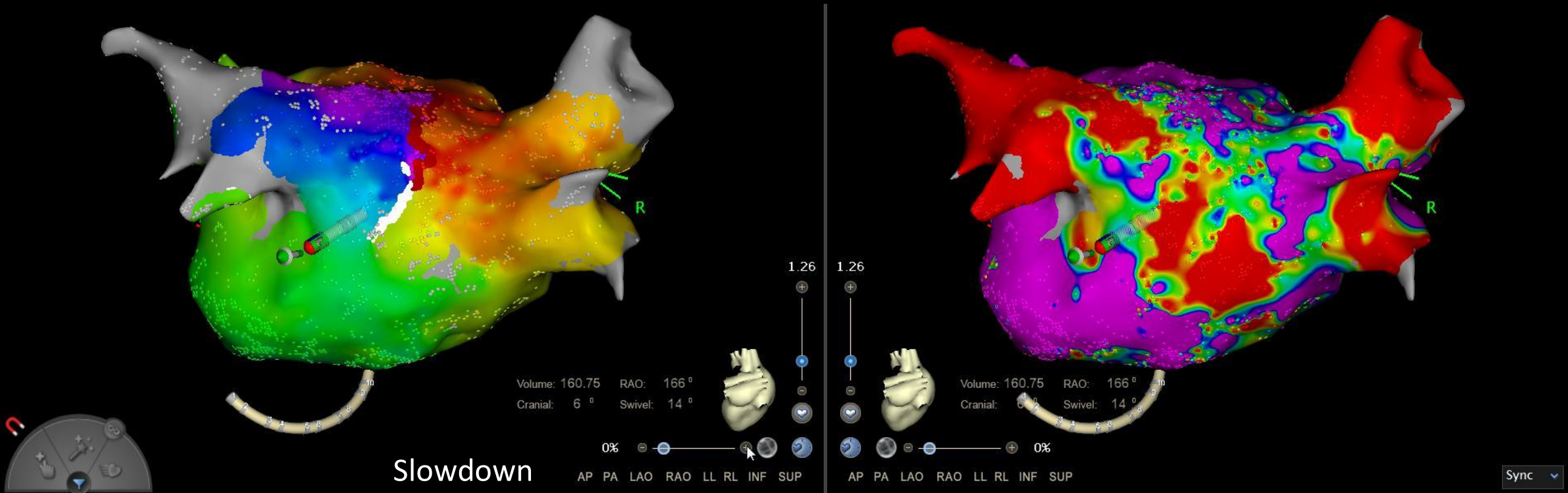


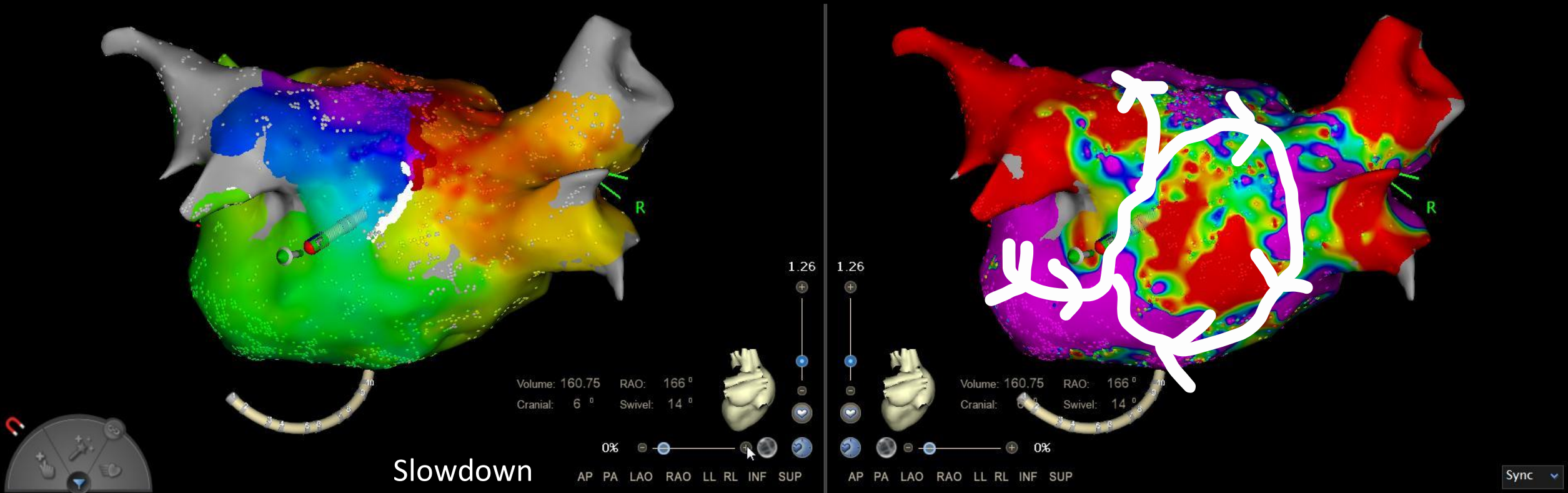


We perform the 1st
application of the left
WACAA and....WE
TERMINATE THE TACHY



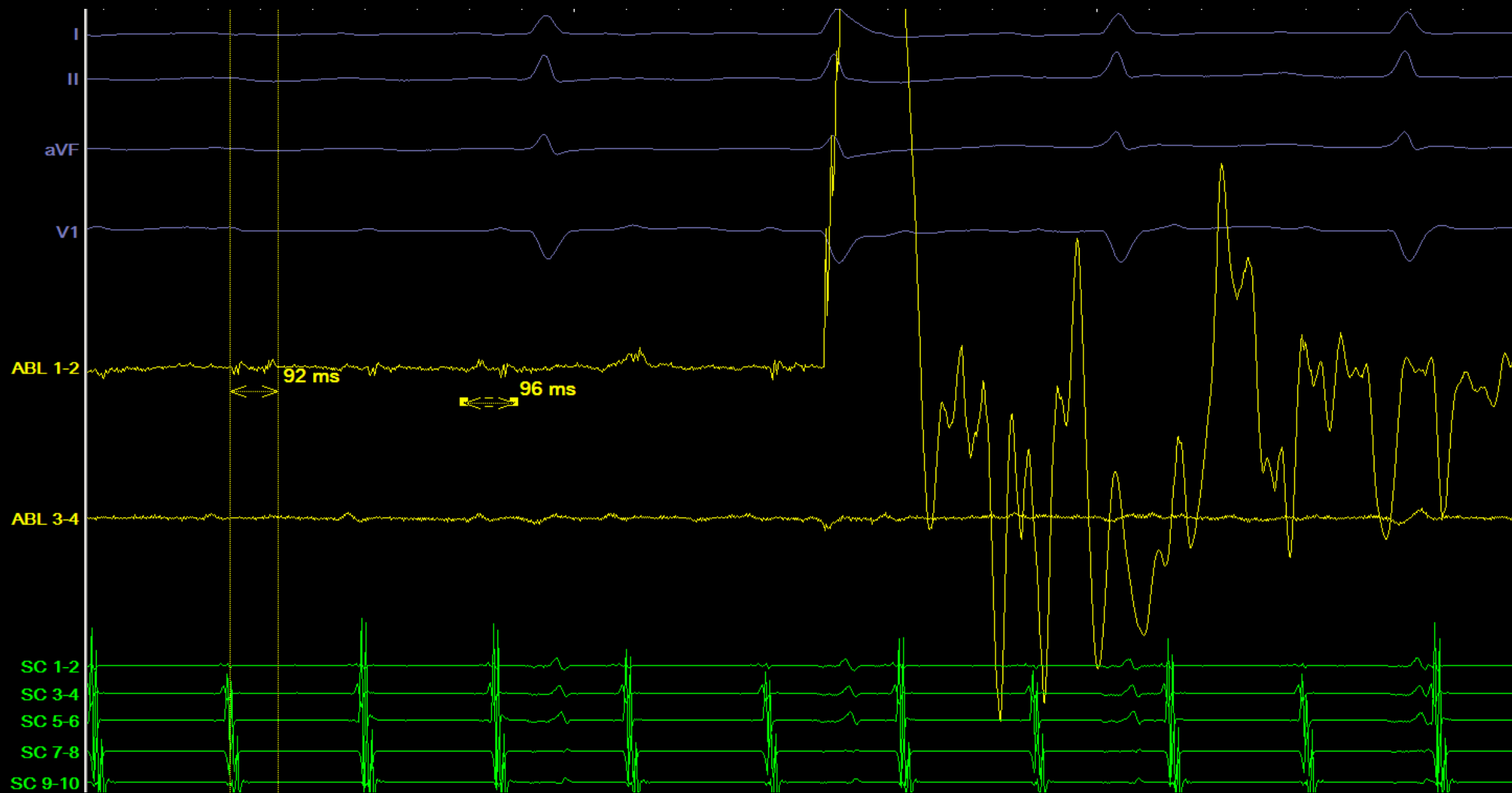




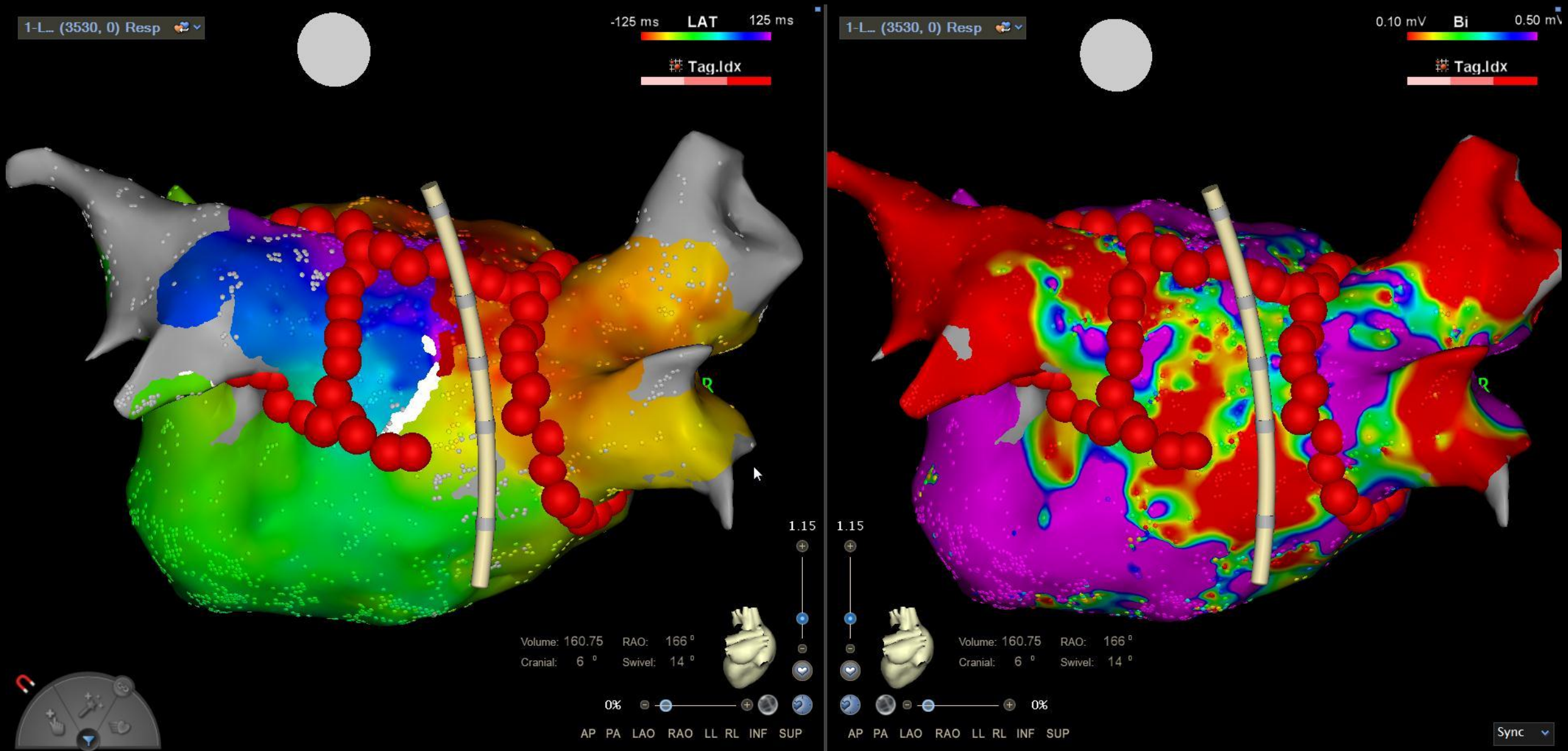


Slowdown

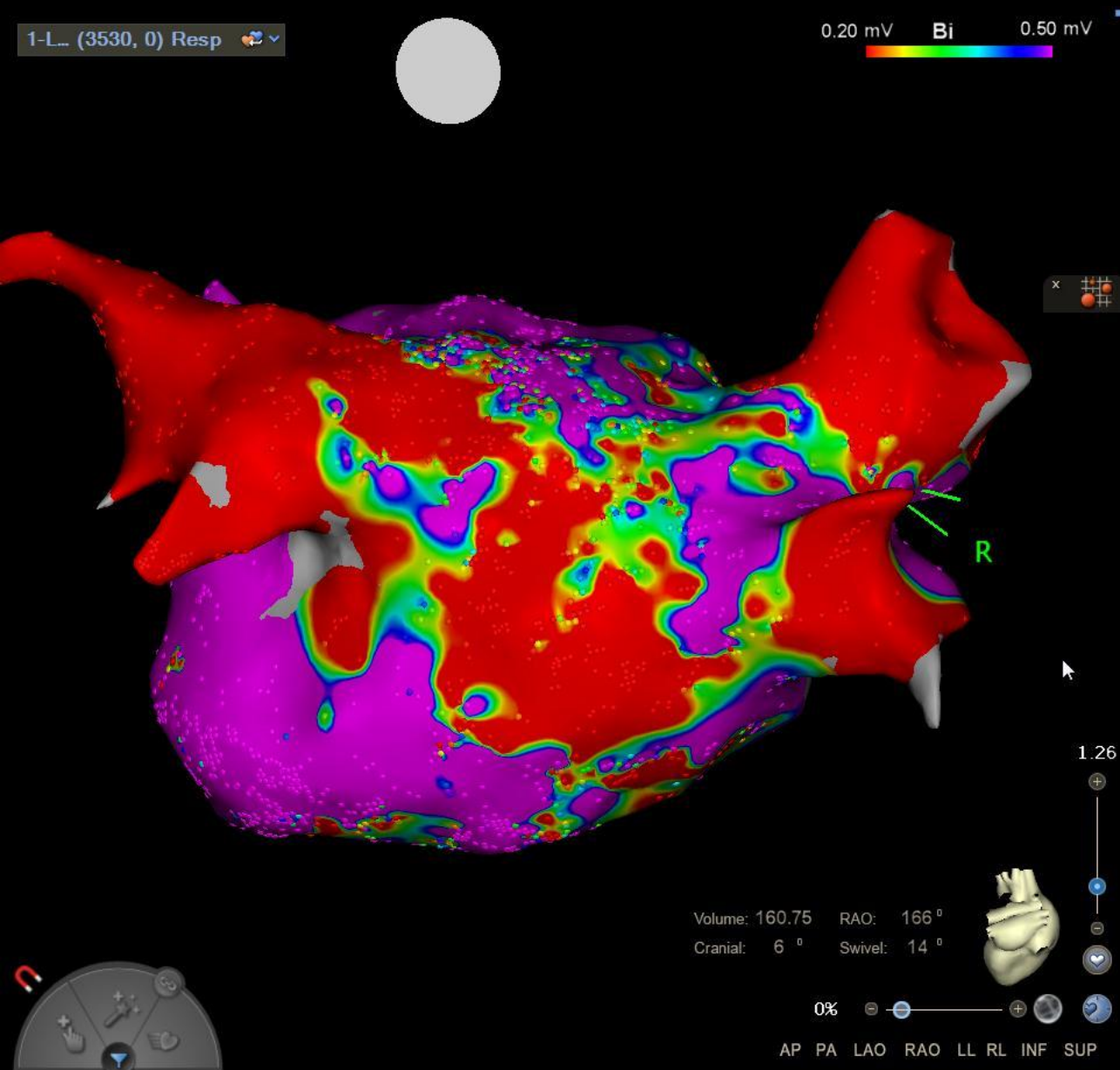




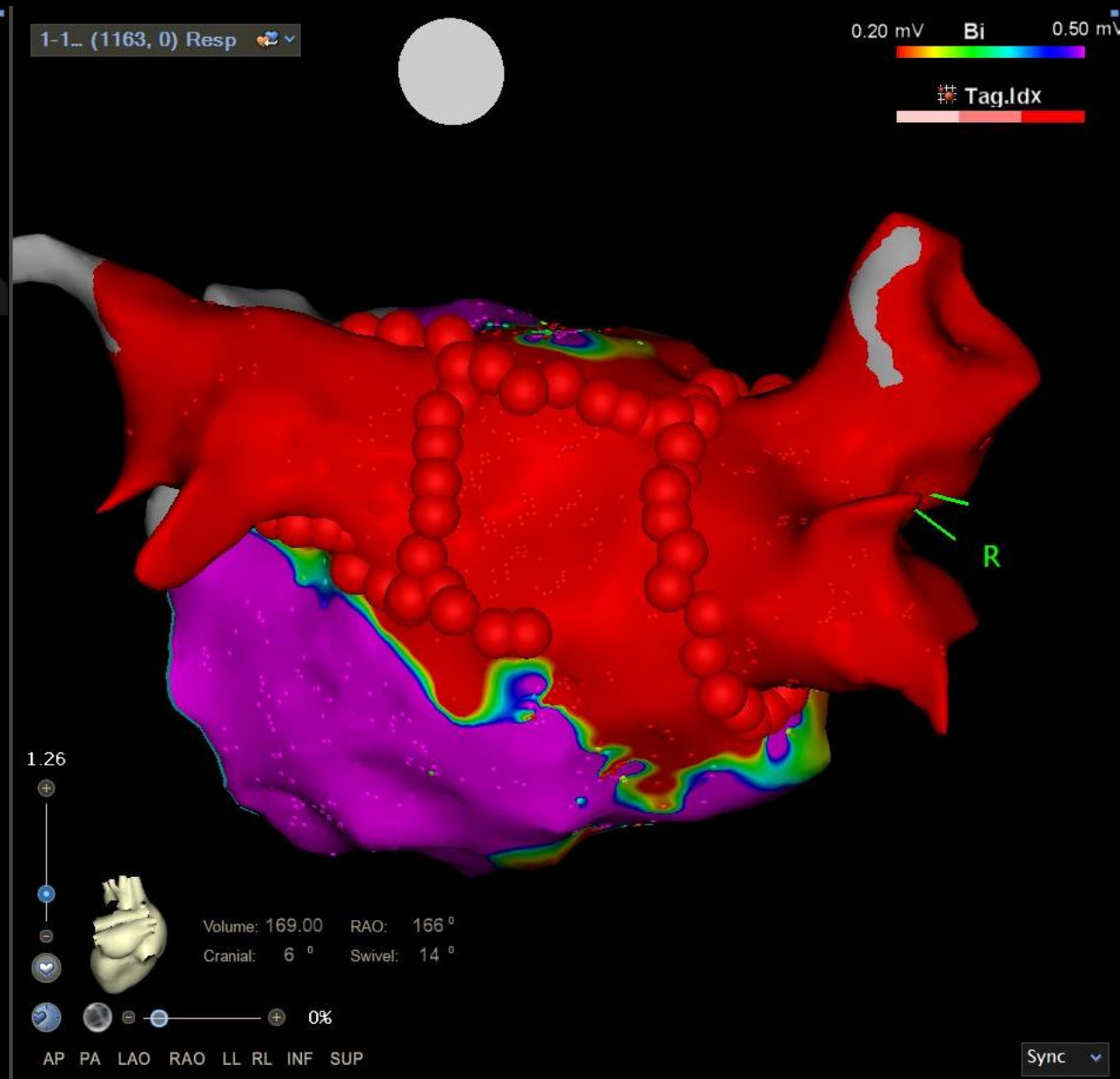
ABLATION LESION SET: PVI + POSTERIOR BOX



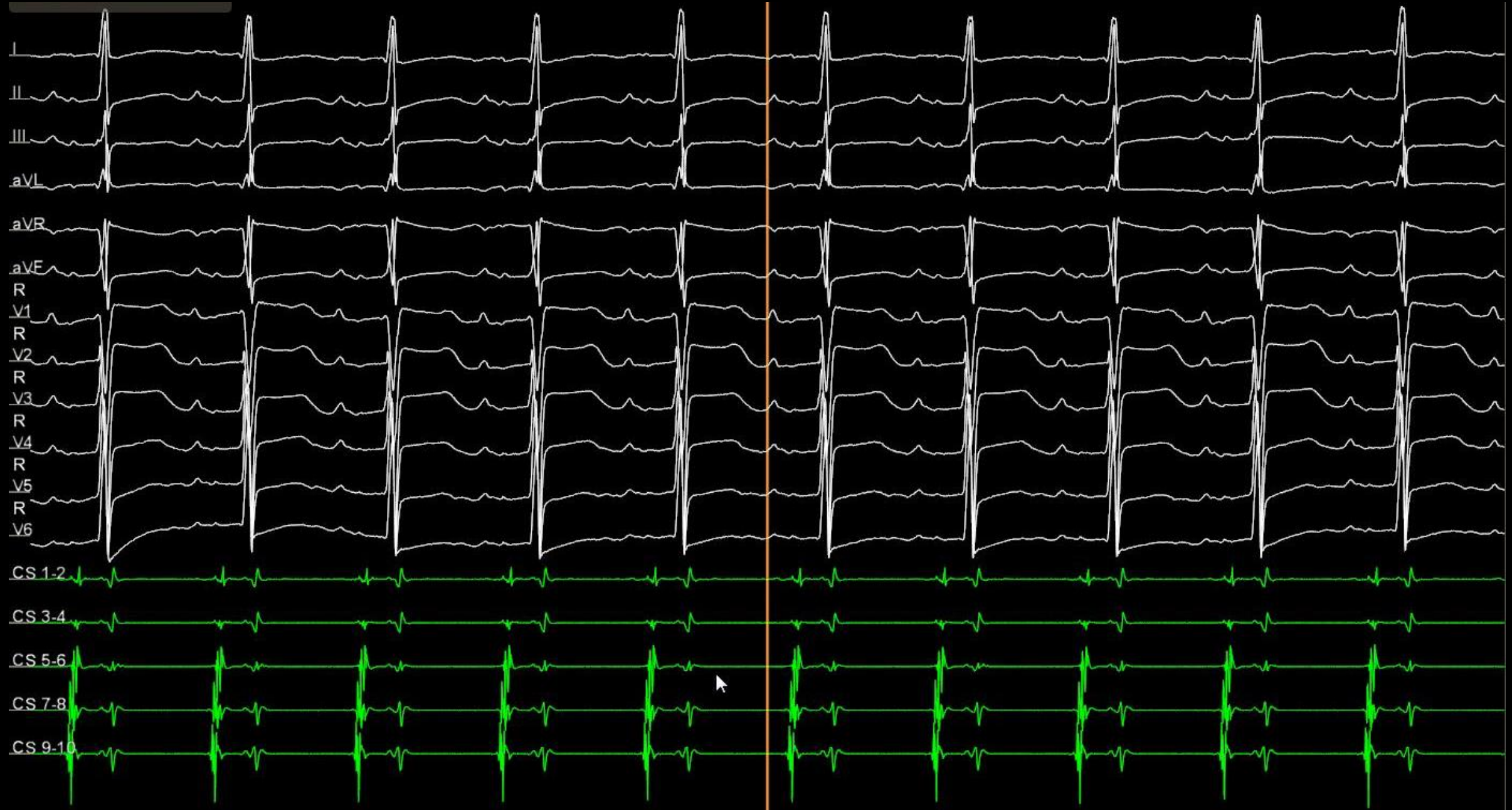
BASELINE VOLTAGE MAP



POST-ABLATION VOLTAGE MAP



FINAL ECG



TAKE HOME MESSAGES

- **Atypical flutter** can occur even in patients **without previous ablation**
- Always look at the **ECG**: it can provide important clues
- There might be **more than one circuit**: figure 8 is common and disregard one of the circuits could lead to a failed ablation.
- Is not **only about activation**: also **voltage** and **key signals** helps to plan the ablation.

MERCI BEAUCOUP !

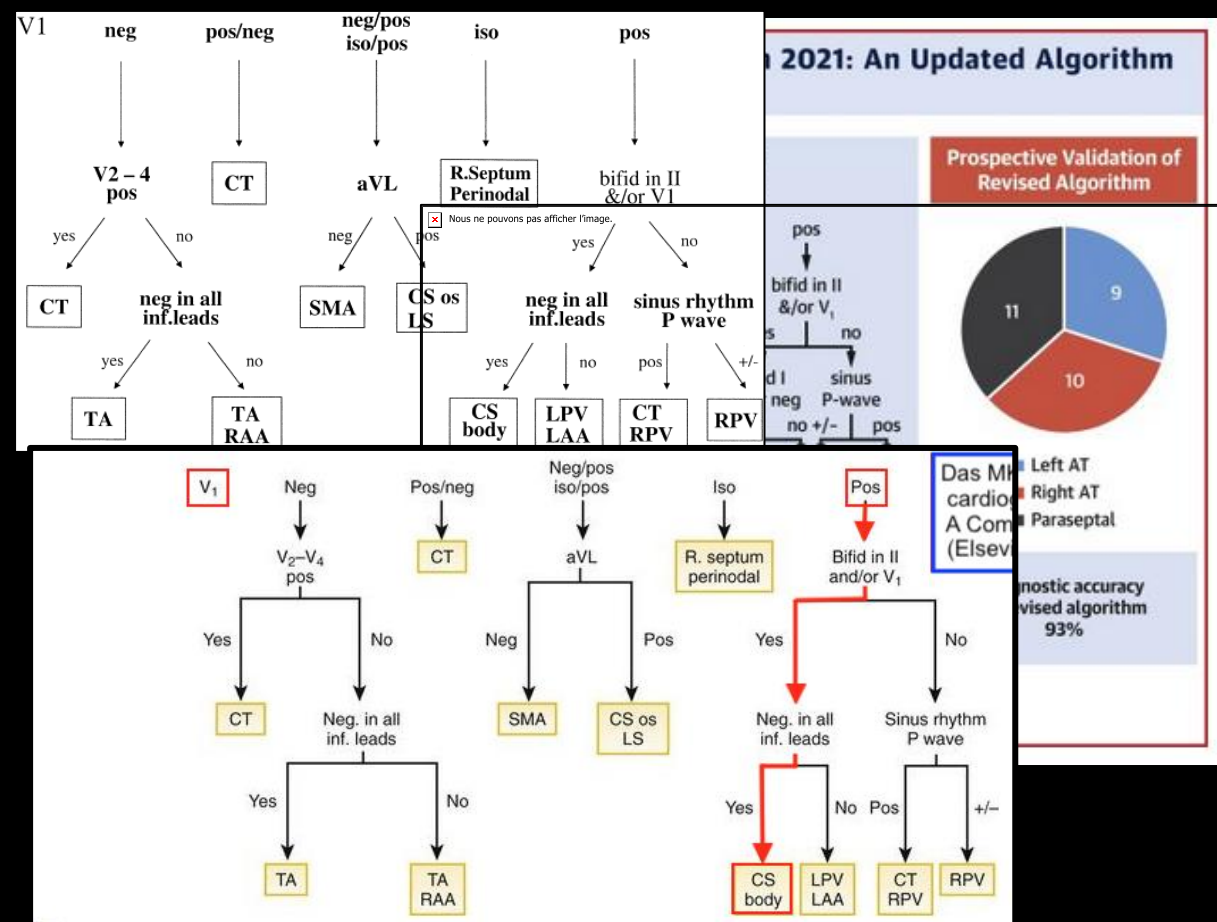


BACKUP

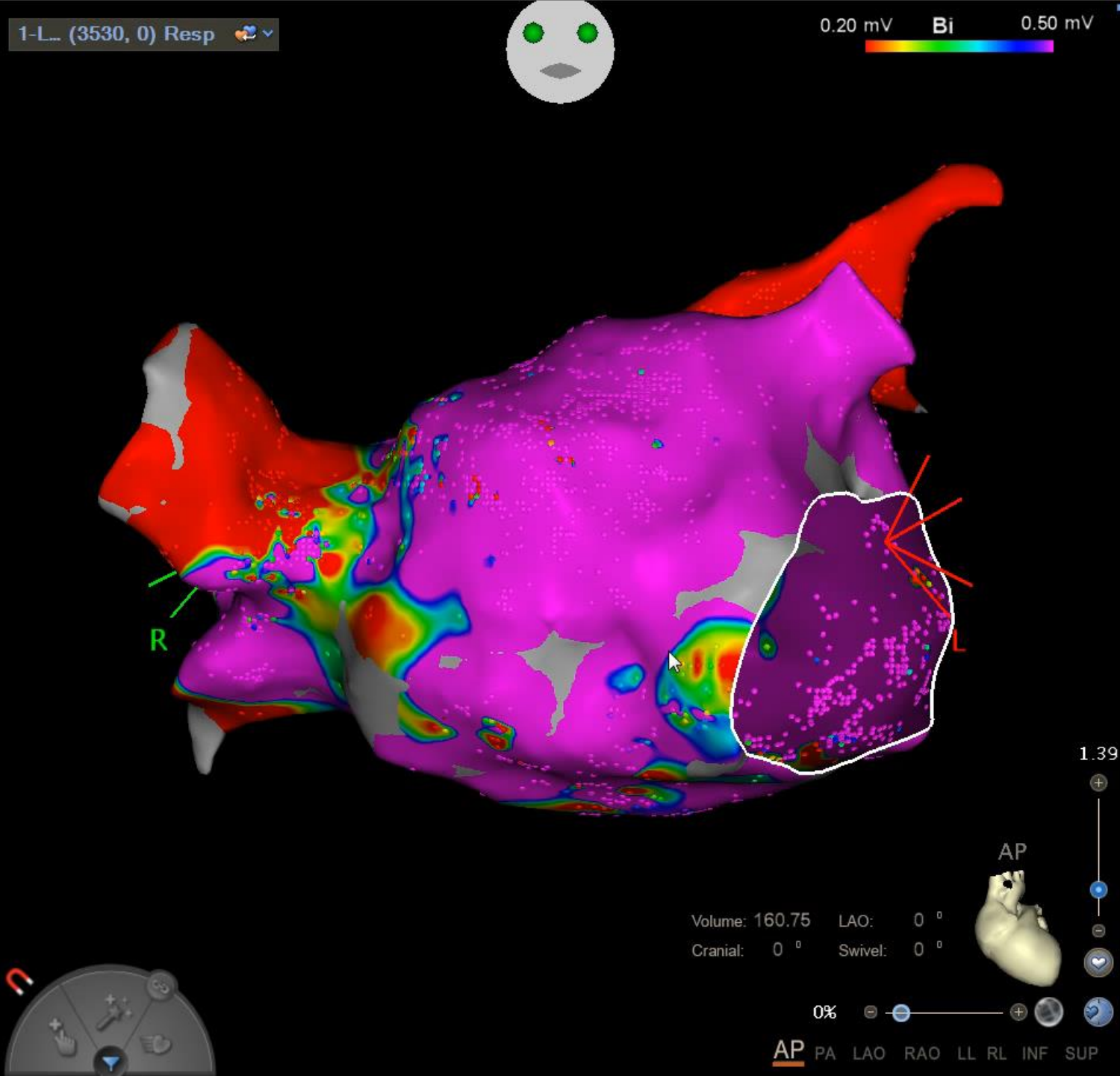
ANALYZING ATRIAL WAVE MORPHOLOGY IN THE ECG...

FOCAL ATRIAL TACHYCARDIA

MACROREENTRANT ATRIAL TACHYCARDIA



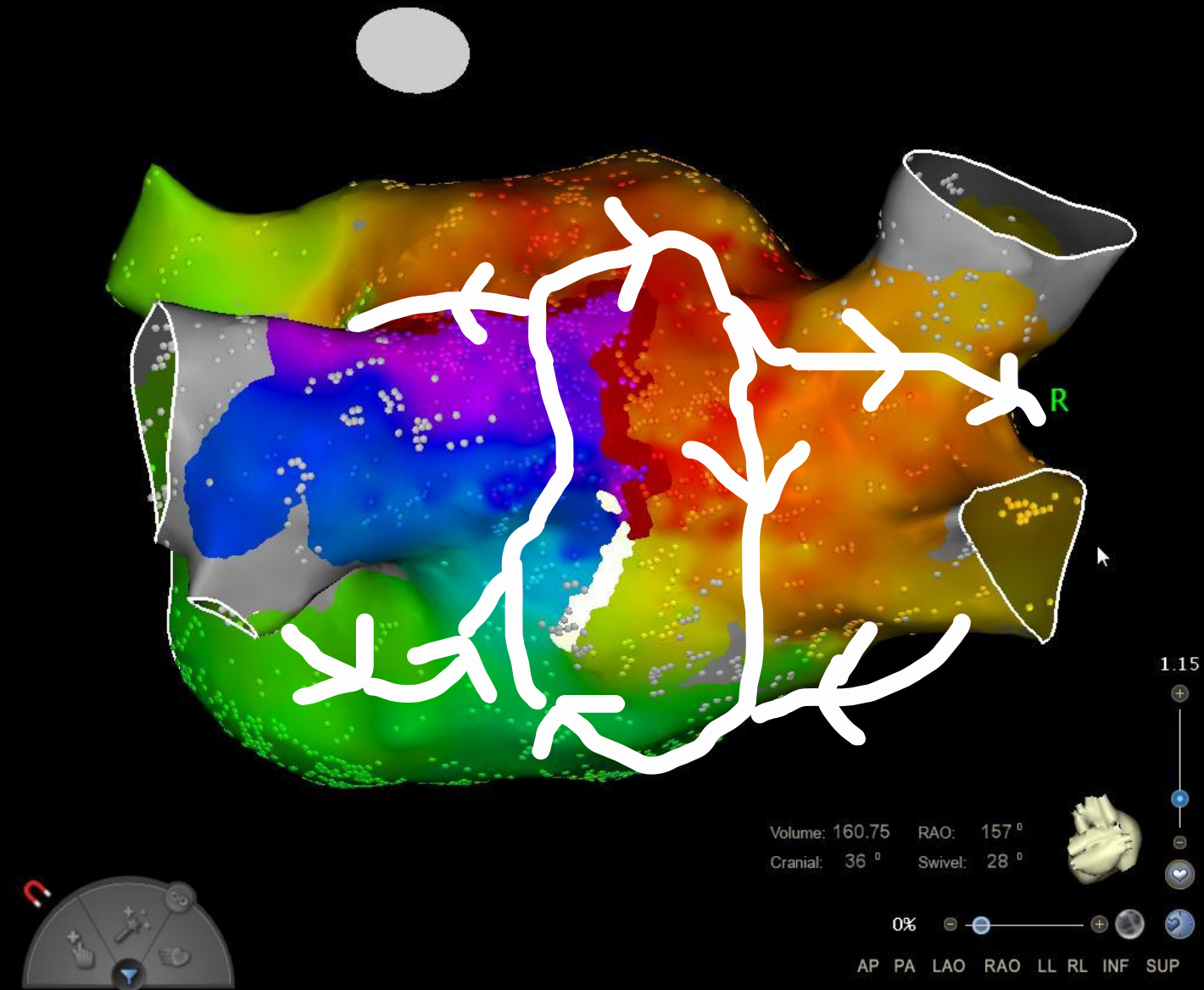
Vidéo voltage



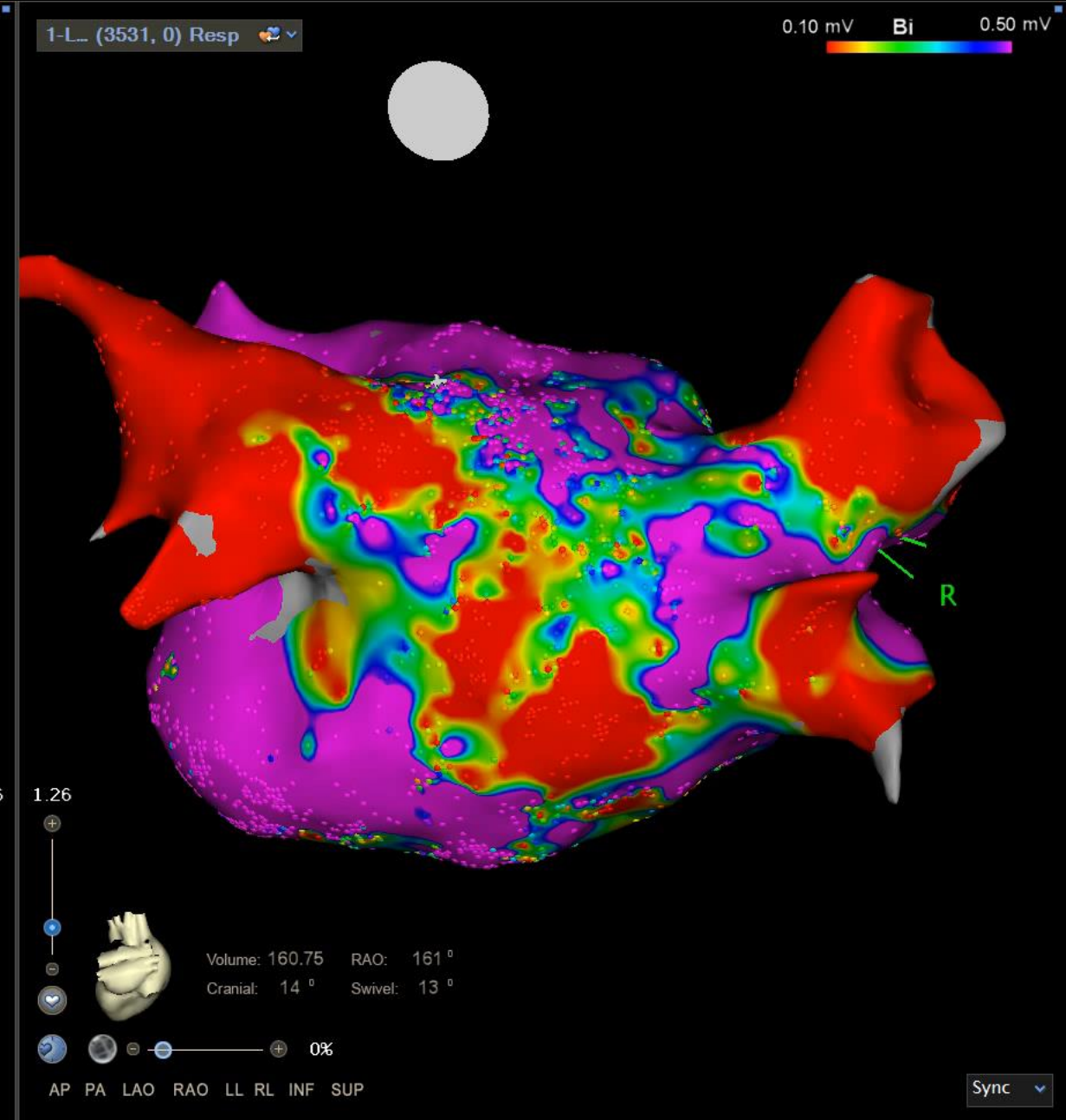
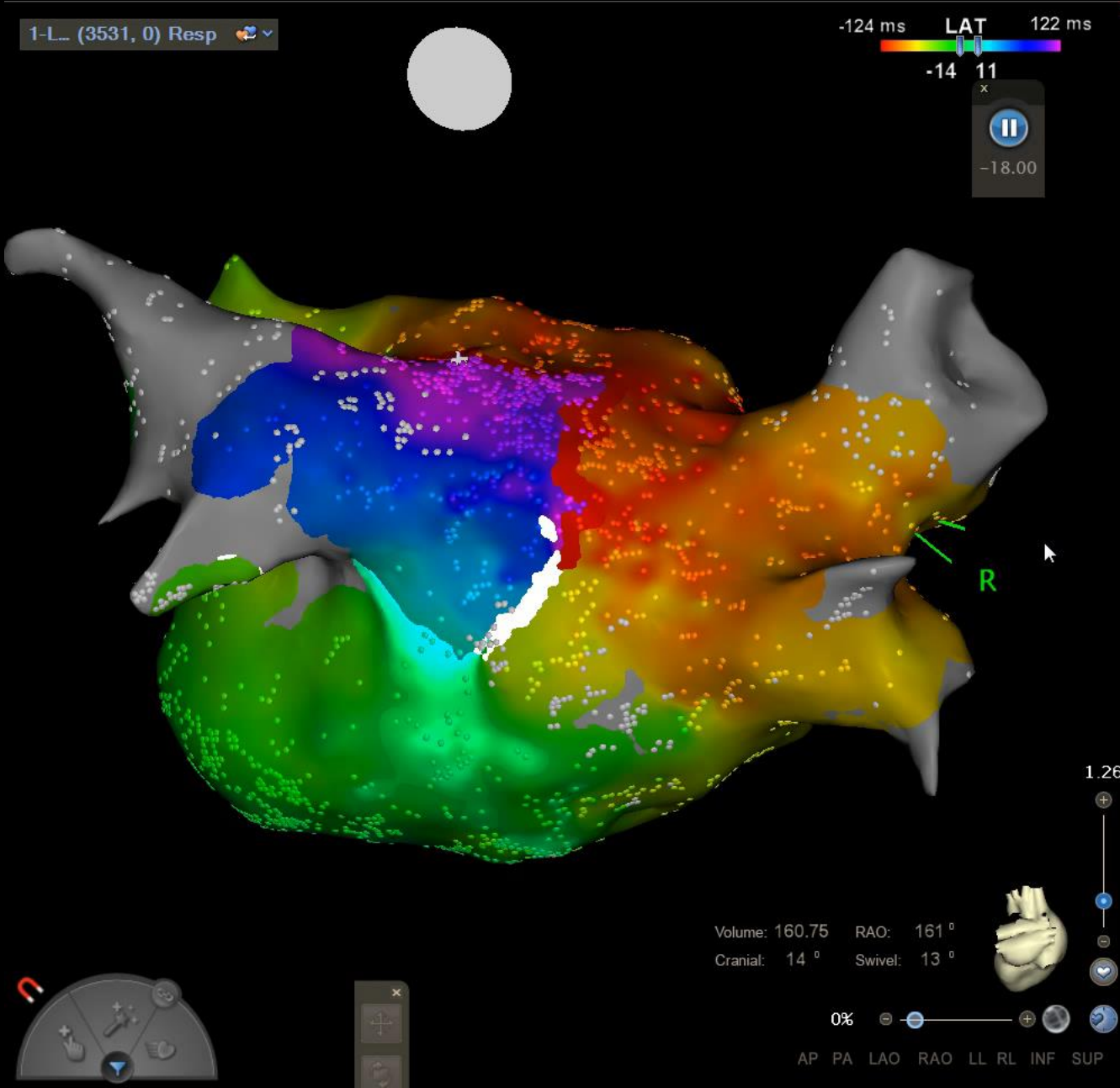
1-L... (3532, 0) Resp

-125 ms LAT 125 ms

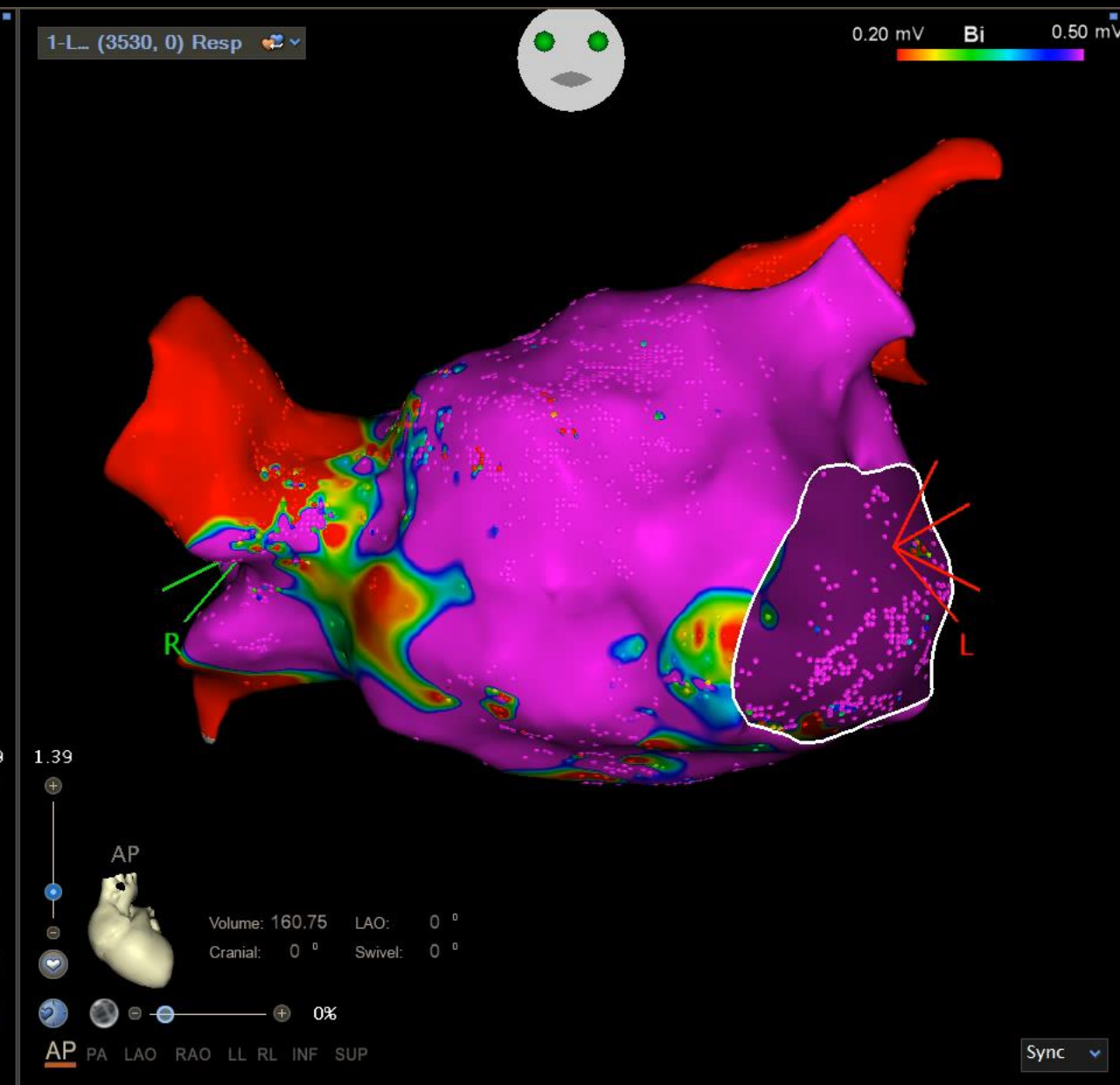
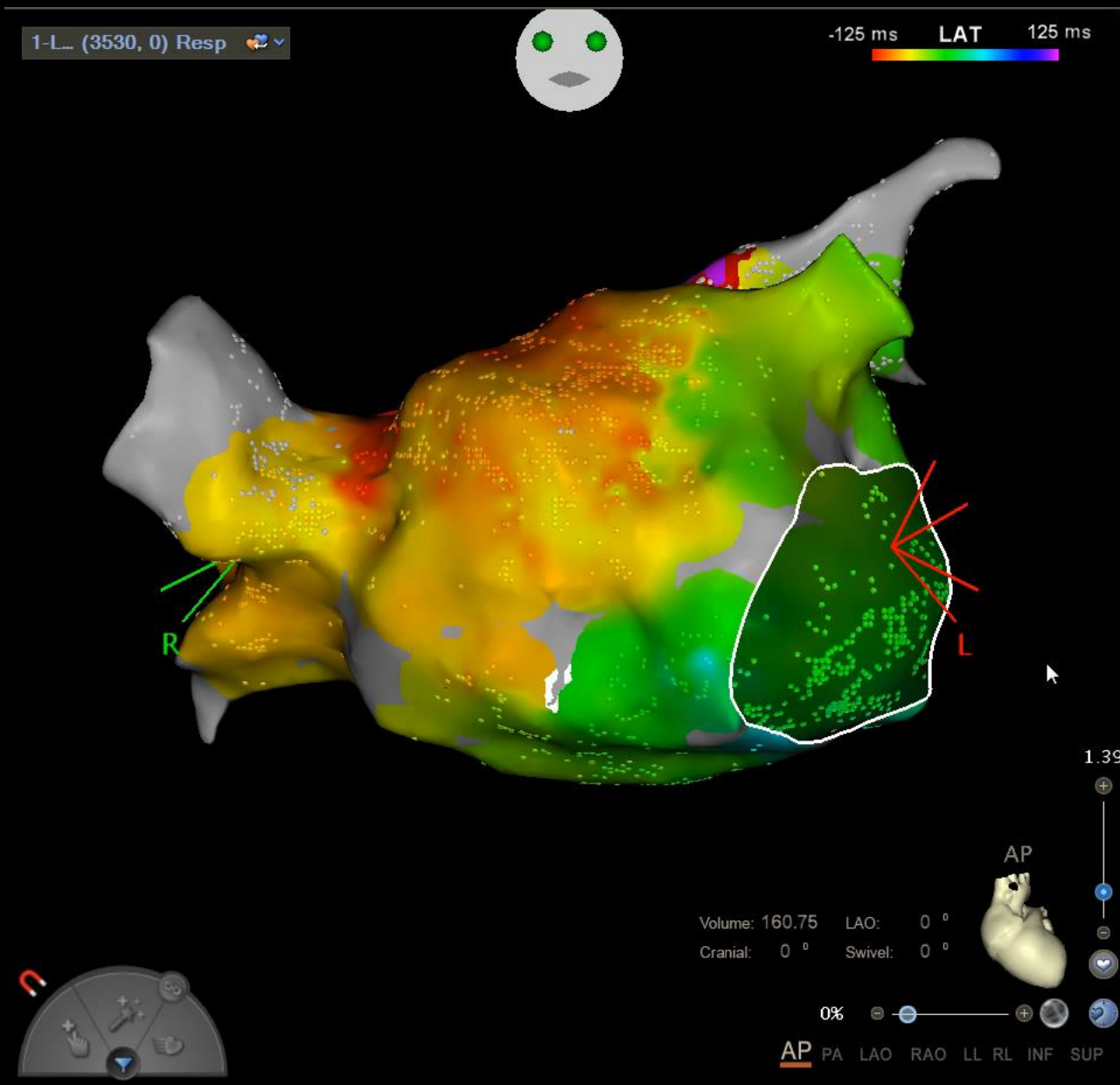
THREE MACROREENTRANT CIRCUITS IN FIGURE OF 8



Vidéo propagation et voltage



Vidéo activation et voltage



ECG TJ

50 mm/sec



17:28:43

17:28:44

17:28:45

17:28:46

17:28:47

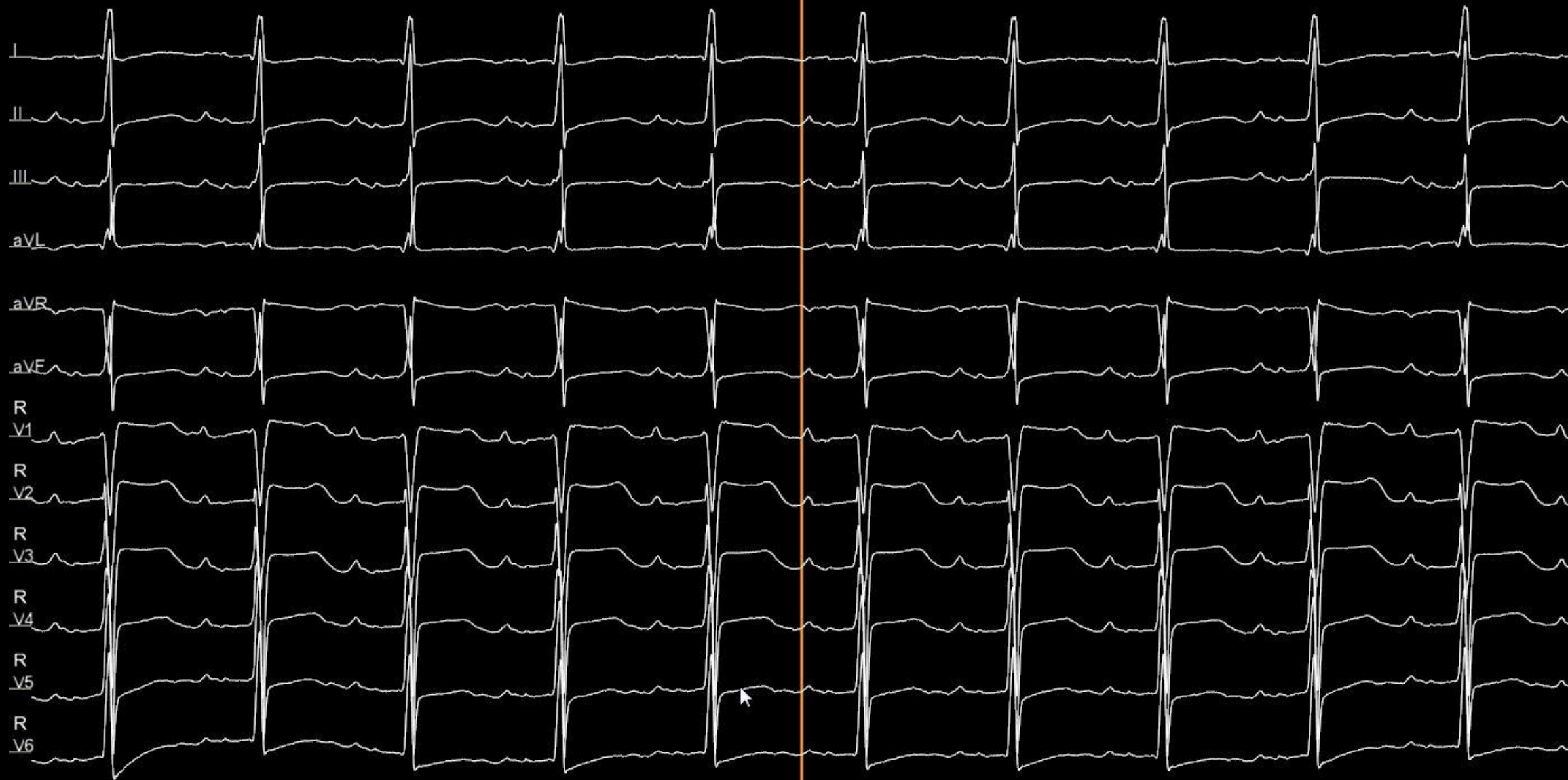
17:28:48

17:28:49

17:28:50

ECG de fin

50 mm/sec



17:36:54

17:36:55

17:36:56

17:36:57

17:36:58

17:36:59

17:37:00

17:37:01