

VT symposium 2019

CATHETER ABLATION OF VT IN AORTIC CUSP

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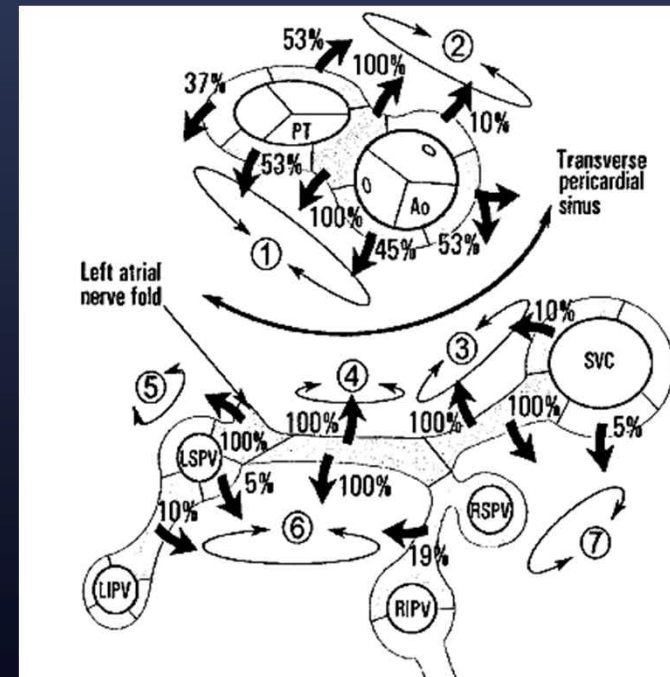
Why the peri-valvular area

Fibrosis

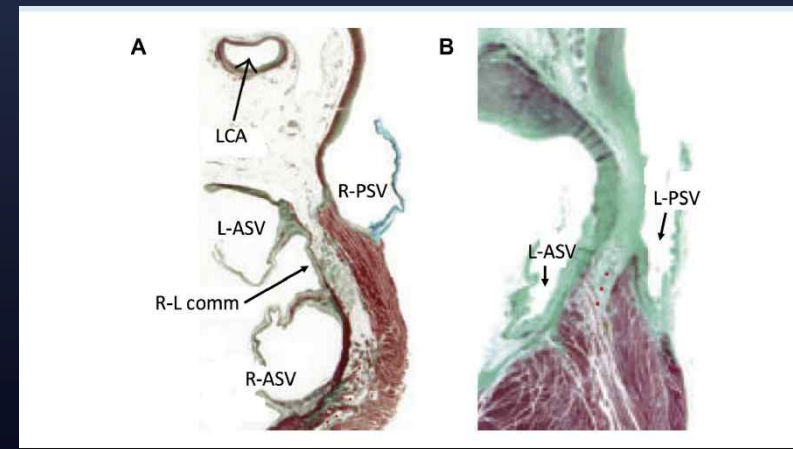
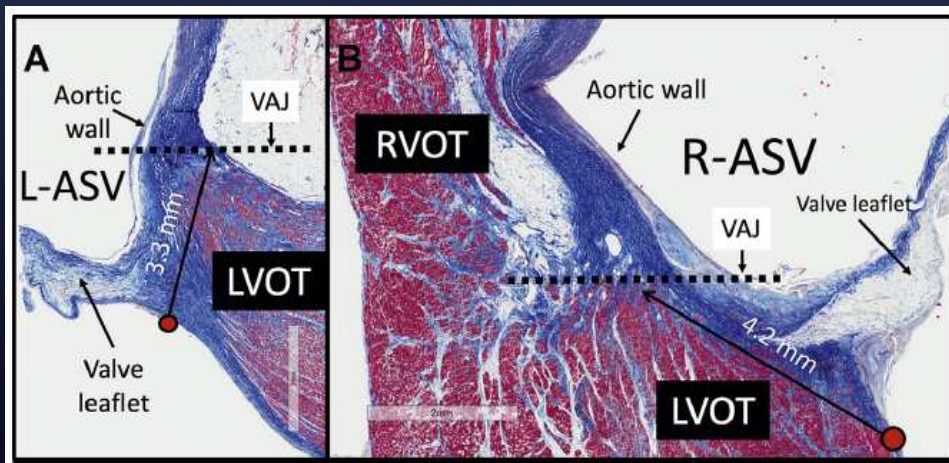
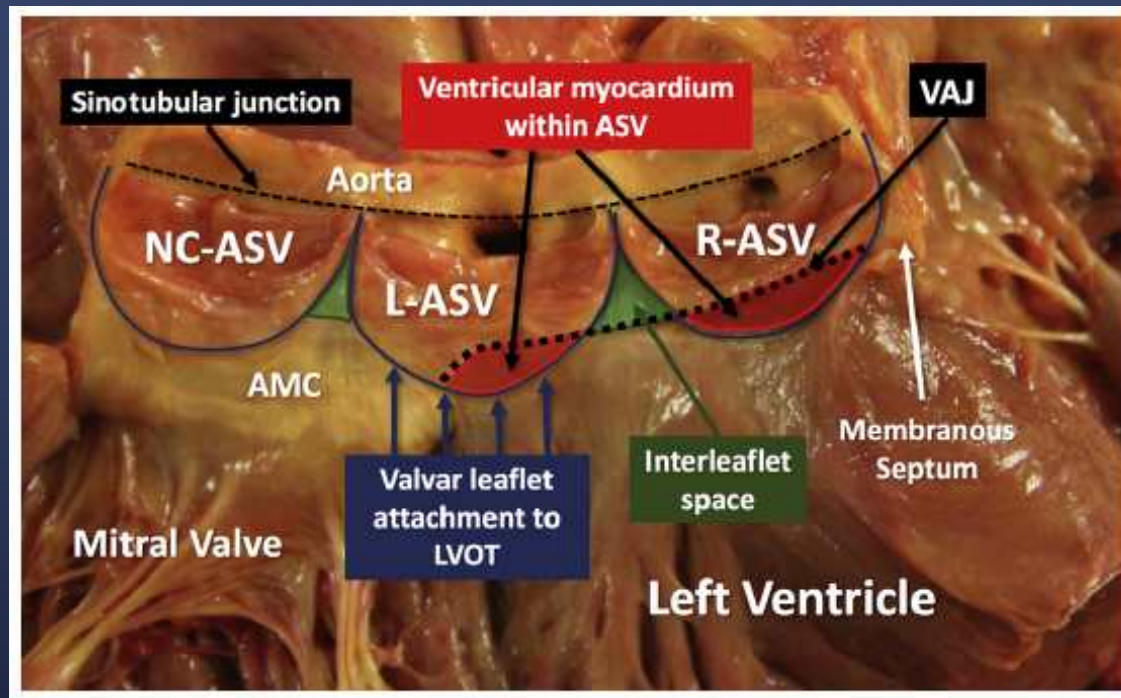
- Tends to occur the non-ischemic CMO in para-valvular areas
- PVCs may be caused by sub-clinical fibrosis

Innervation

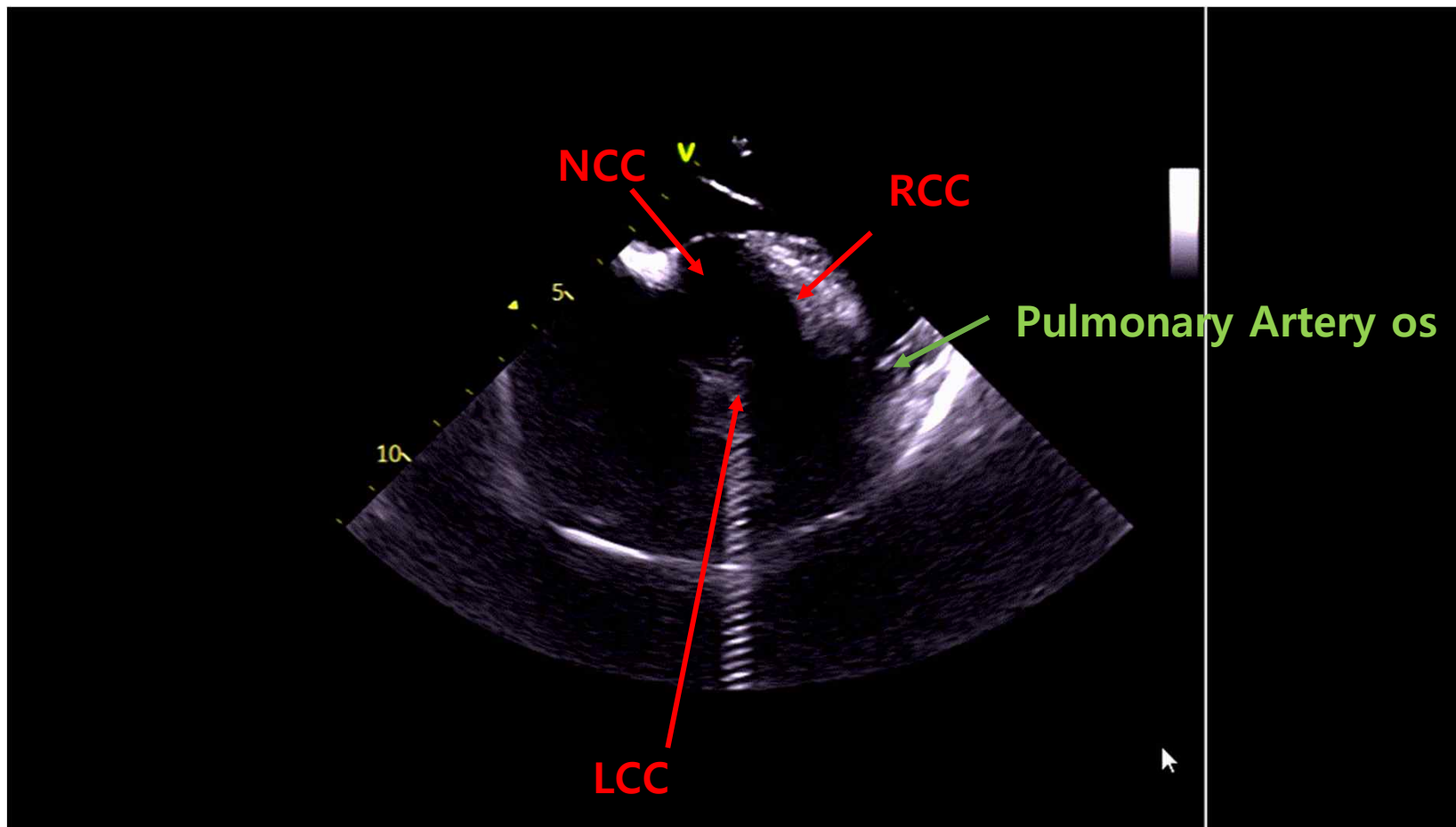
- Subplexuses (1RV, 3LV, 2RA, 3LA)



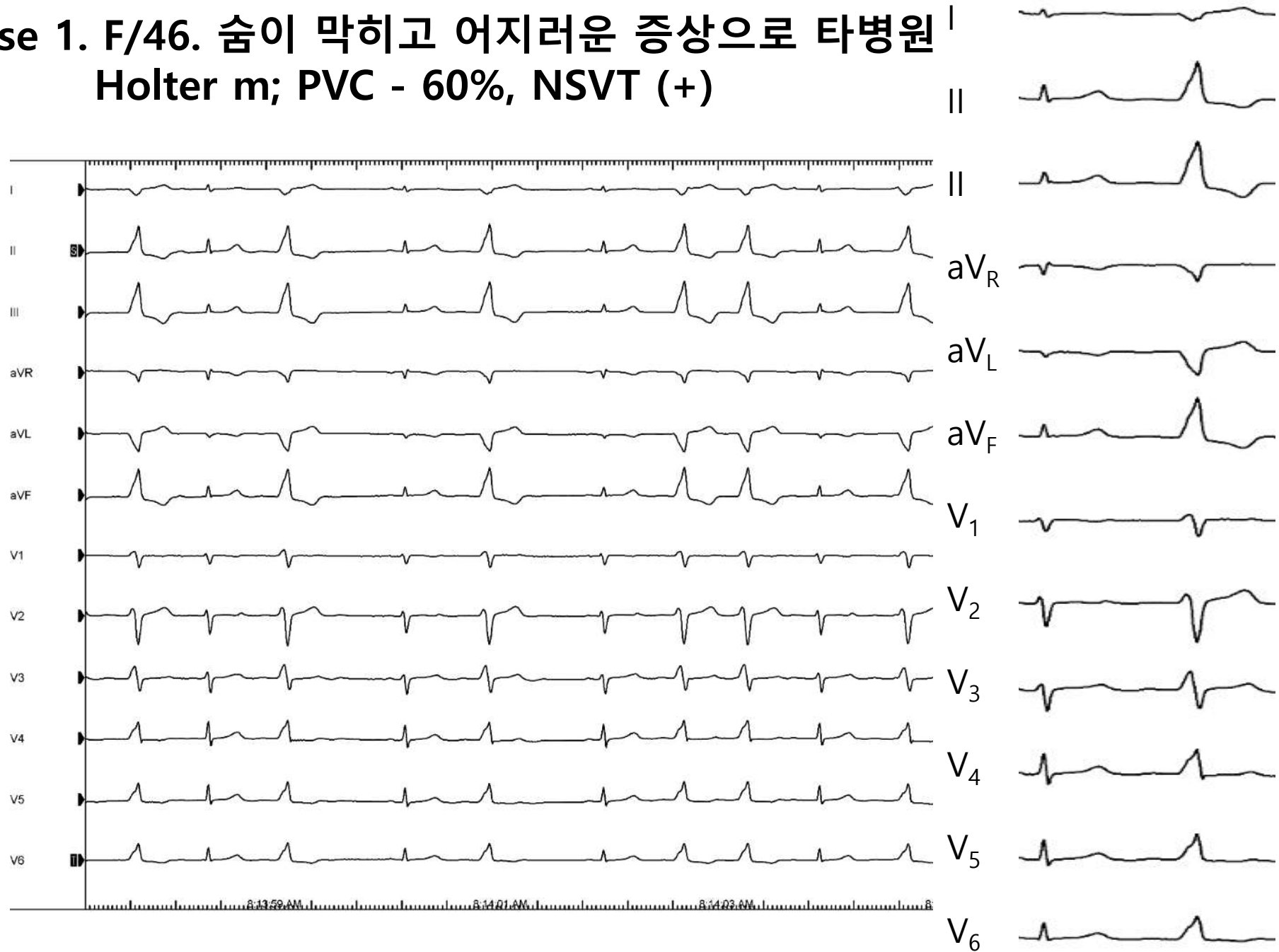
Anatomy and Histology of Aortic Root



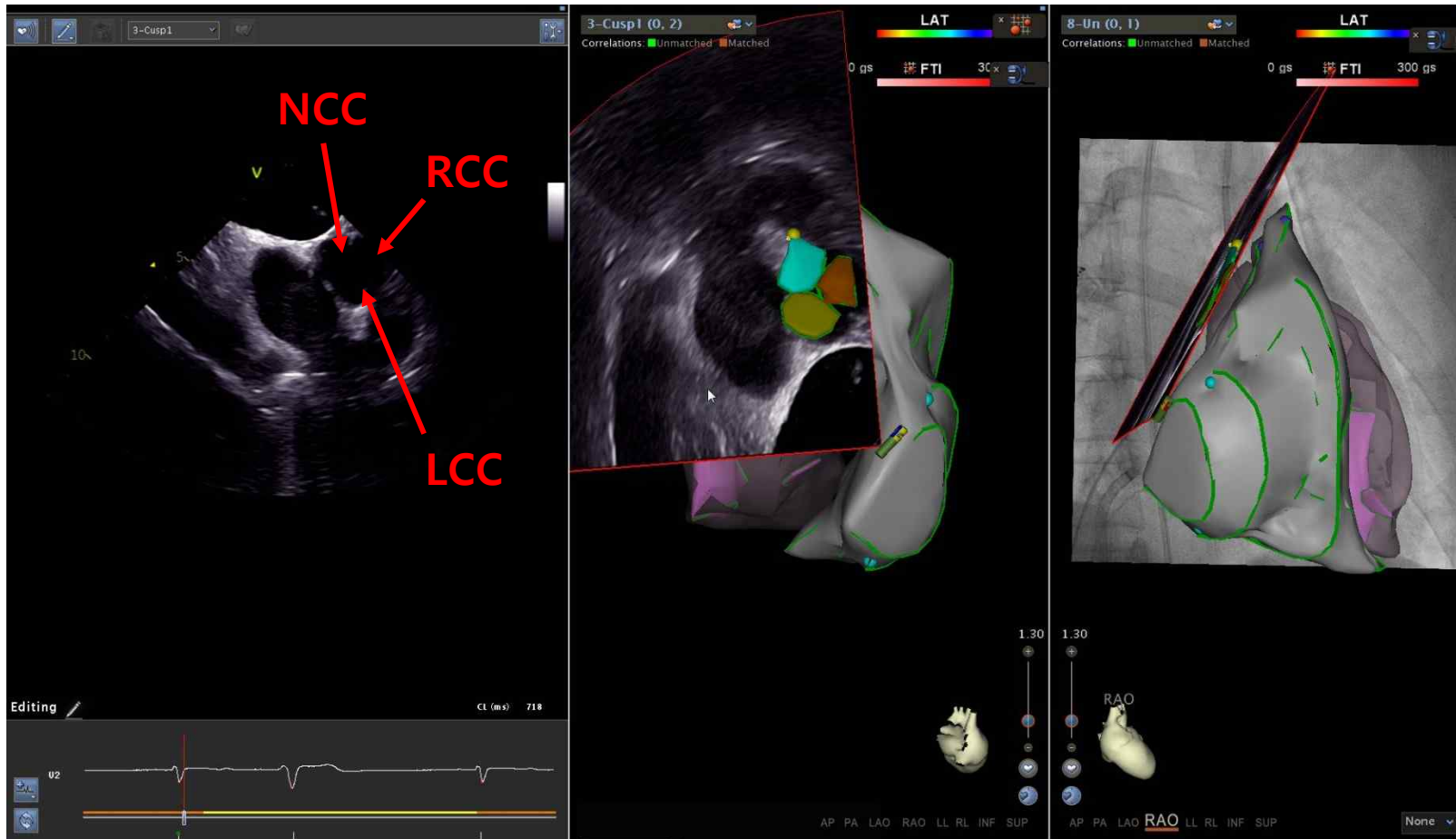
Intracardiac Echo



**Case 1. F/46. 숨이 막히고 어지러운 증상으로 타병원
Holter m; PVC - 60%, NSVT (+)**

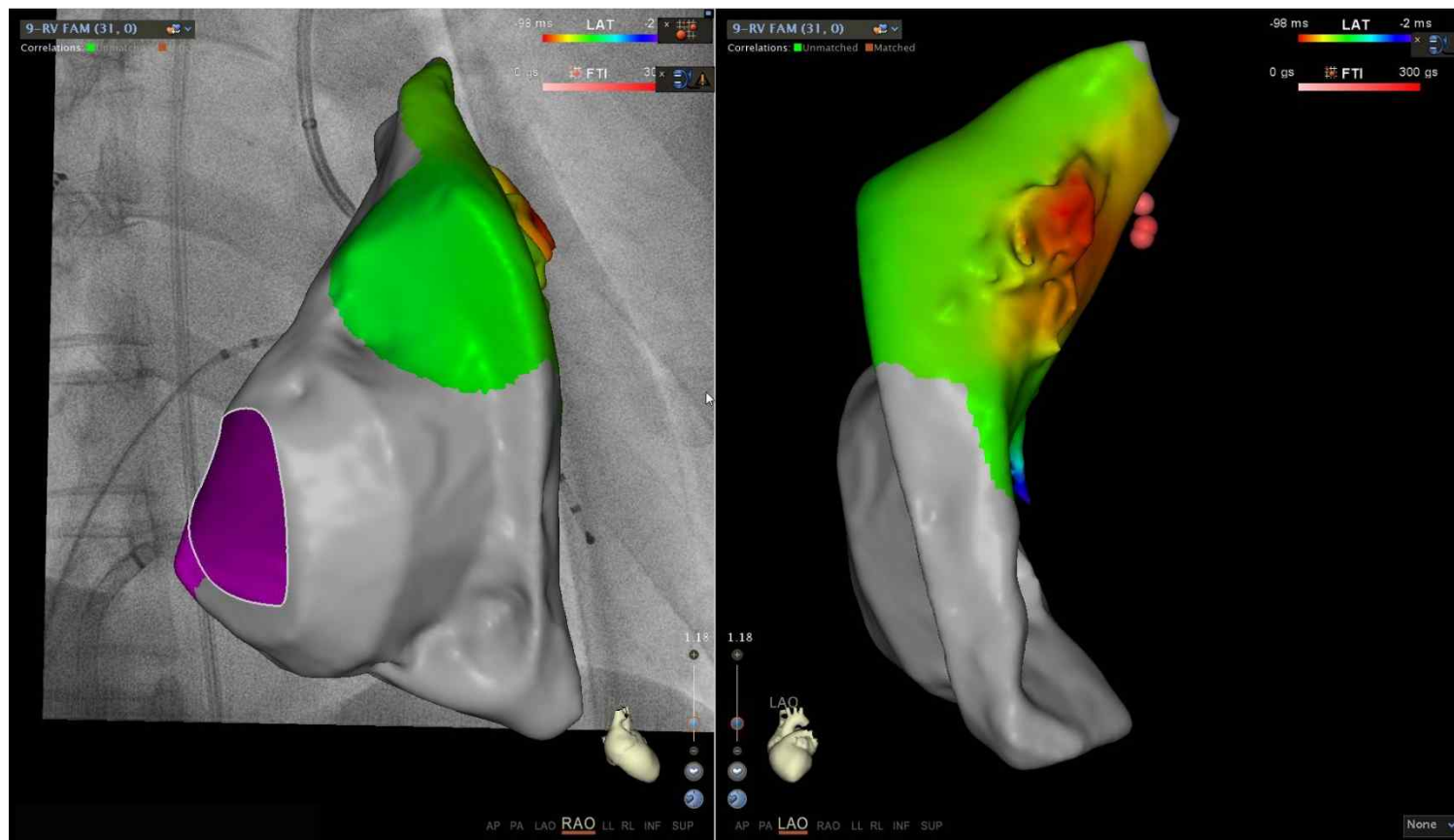


Anatomical Mapping



Activation Mapping

- 1st mapping site: RVOT
- Early site: RVOT anterior septum



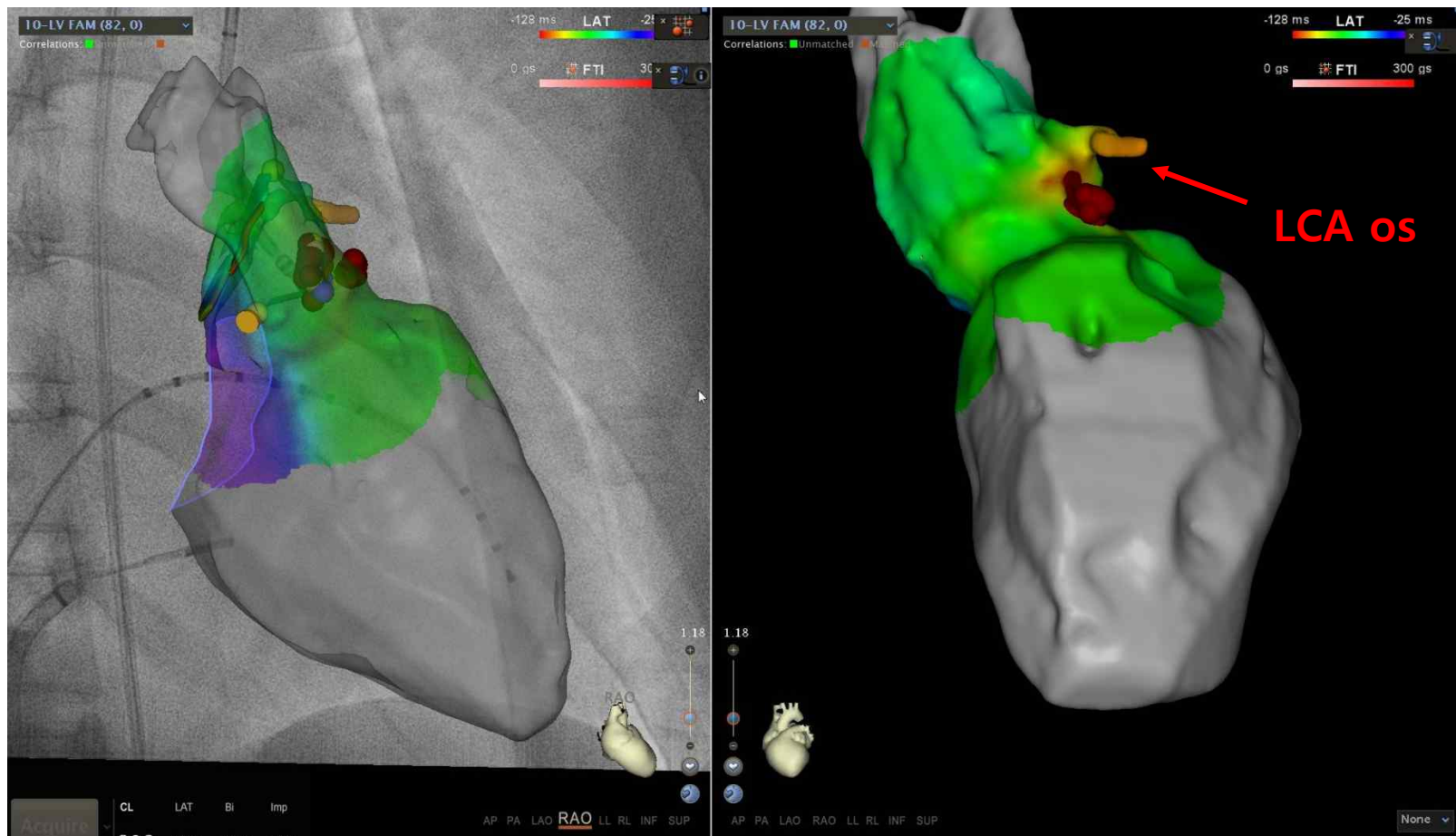
Activation Mapping

- Early site: RVOT anterior septum -11ms earlier

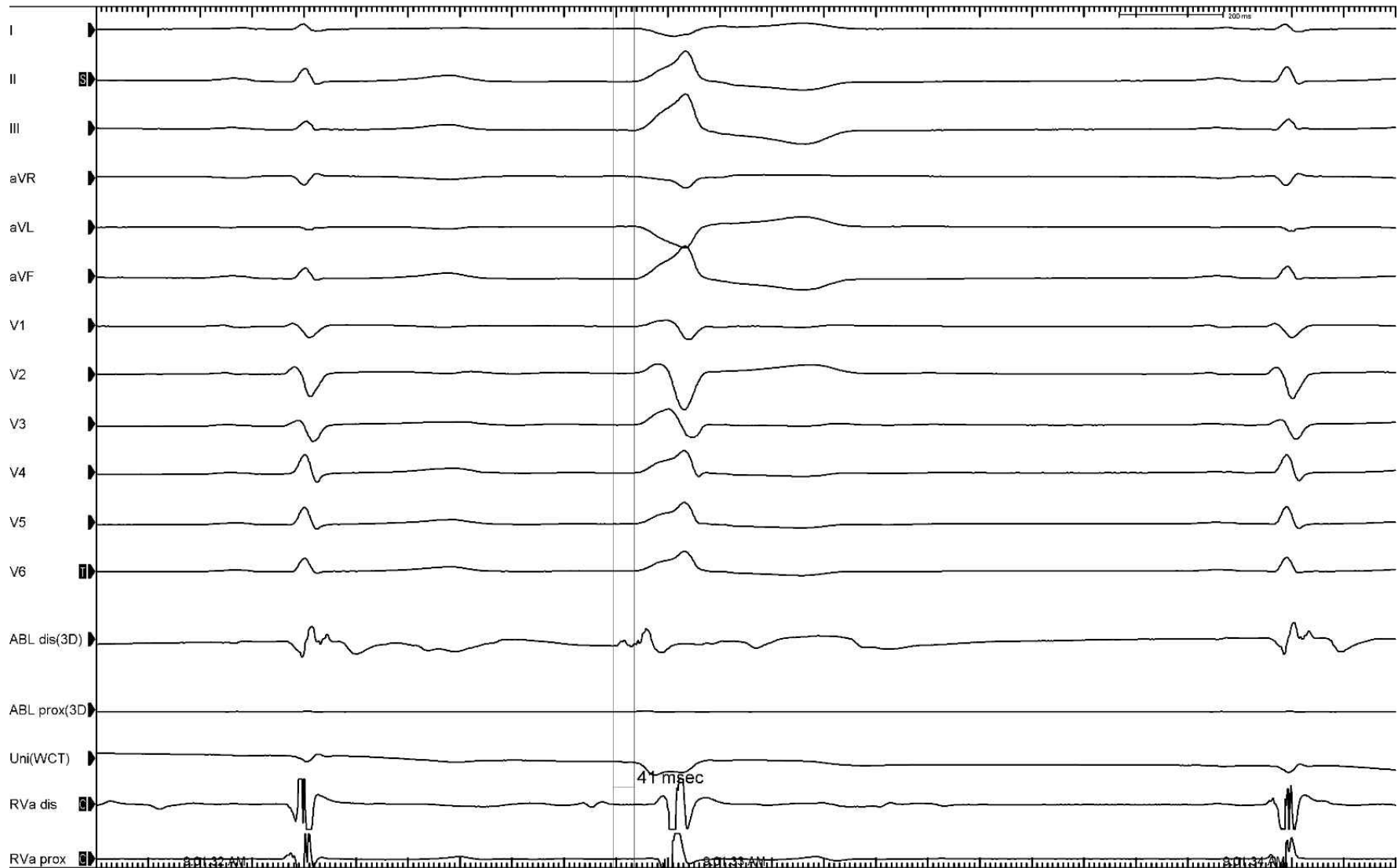


Activation Mapping

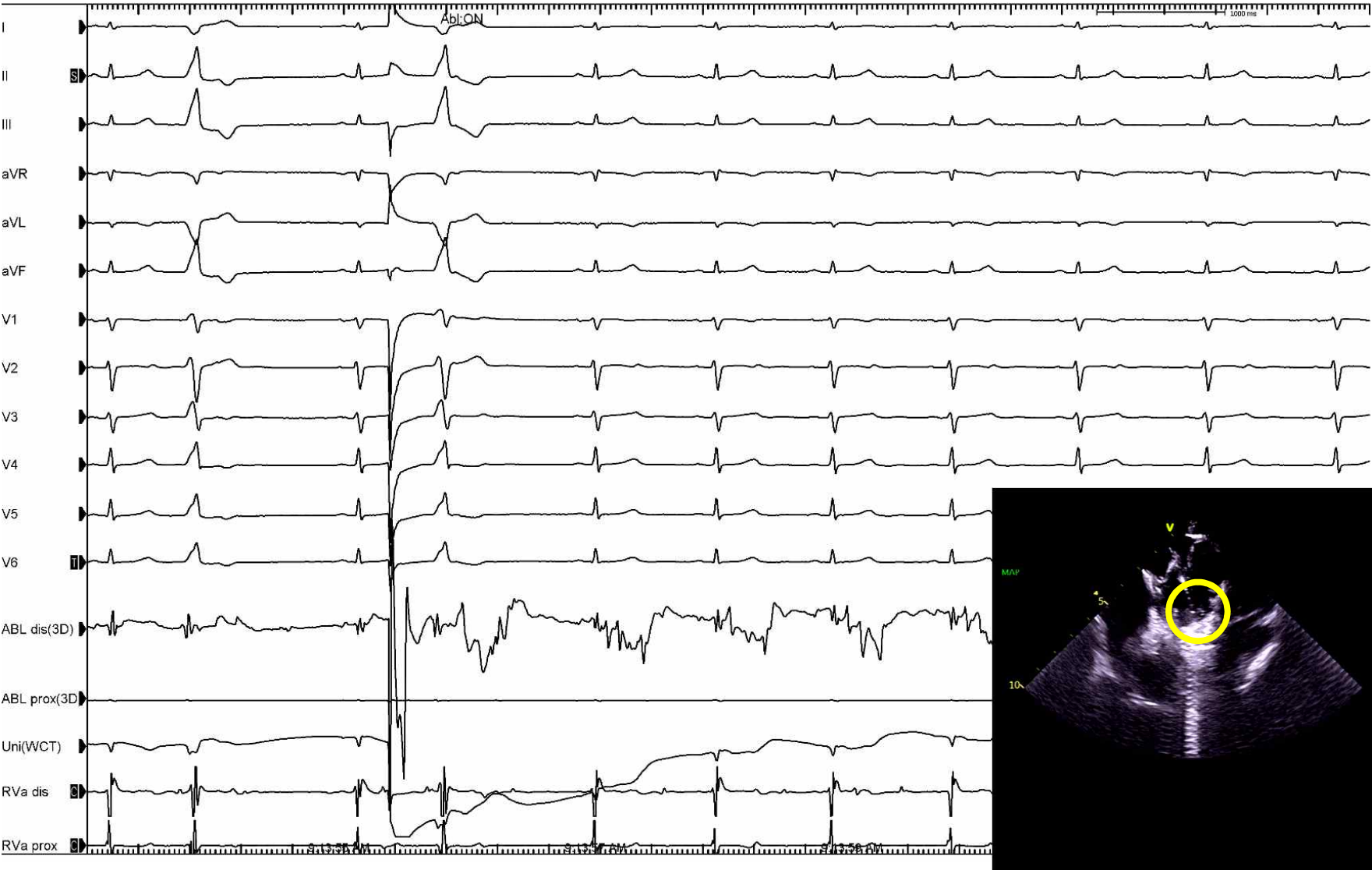
- 2nd mapping site: aortic cusp
- Early site: LCC



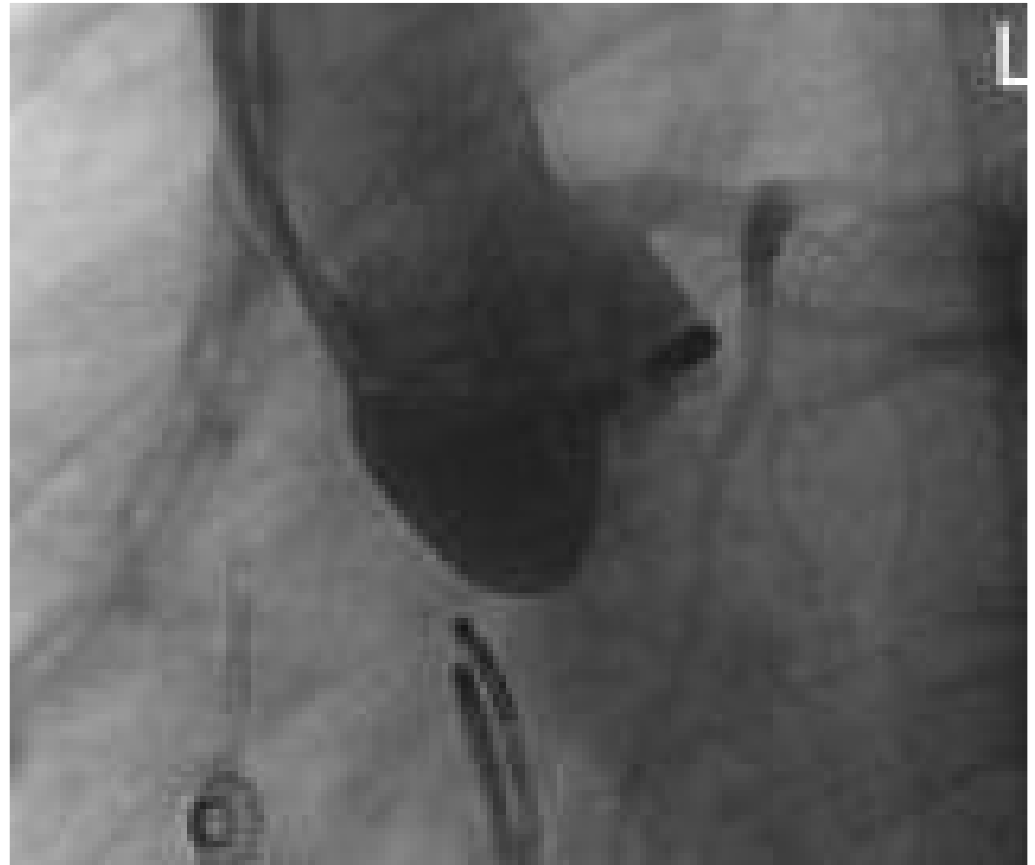
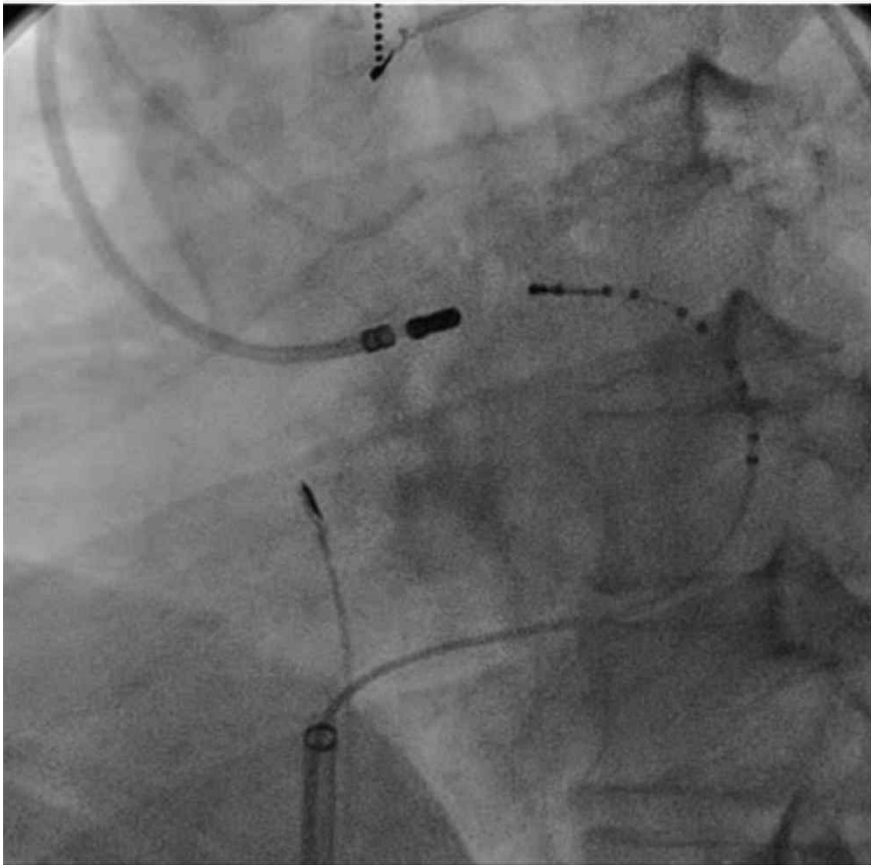
Good Potential : -41ms



Successful Site – LCC (below the LAD OS)



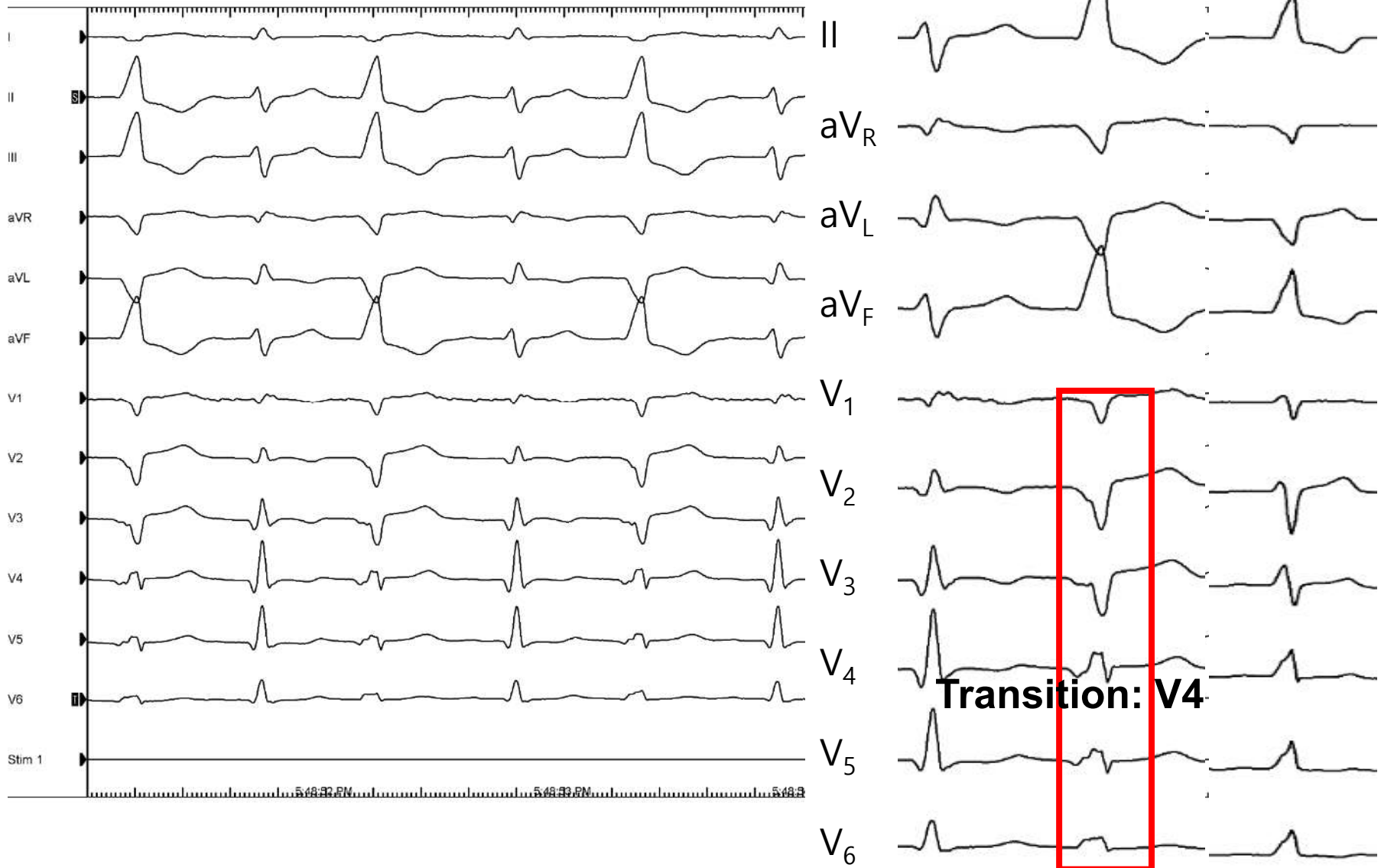
Successful Site – LCC (below the LAD OS)



LAO

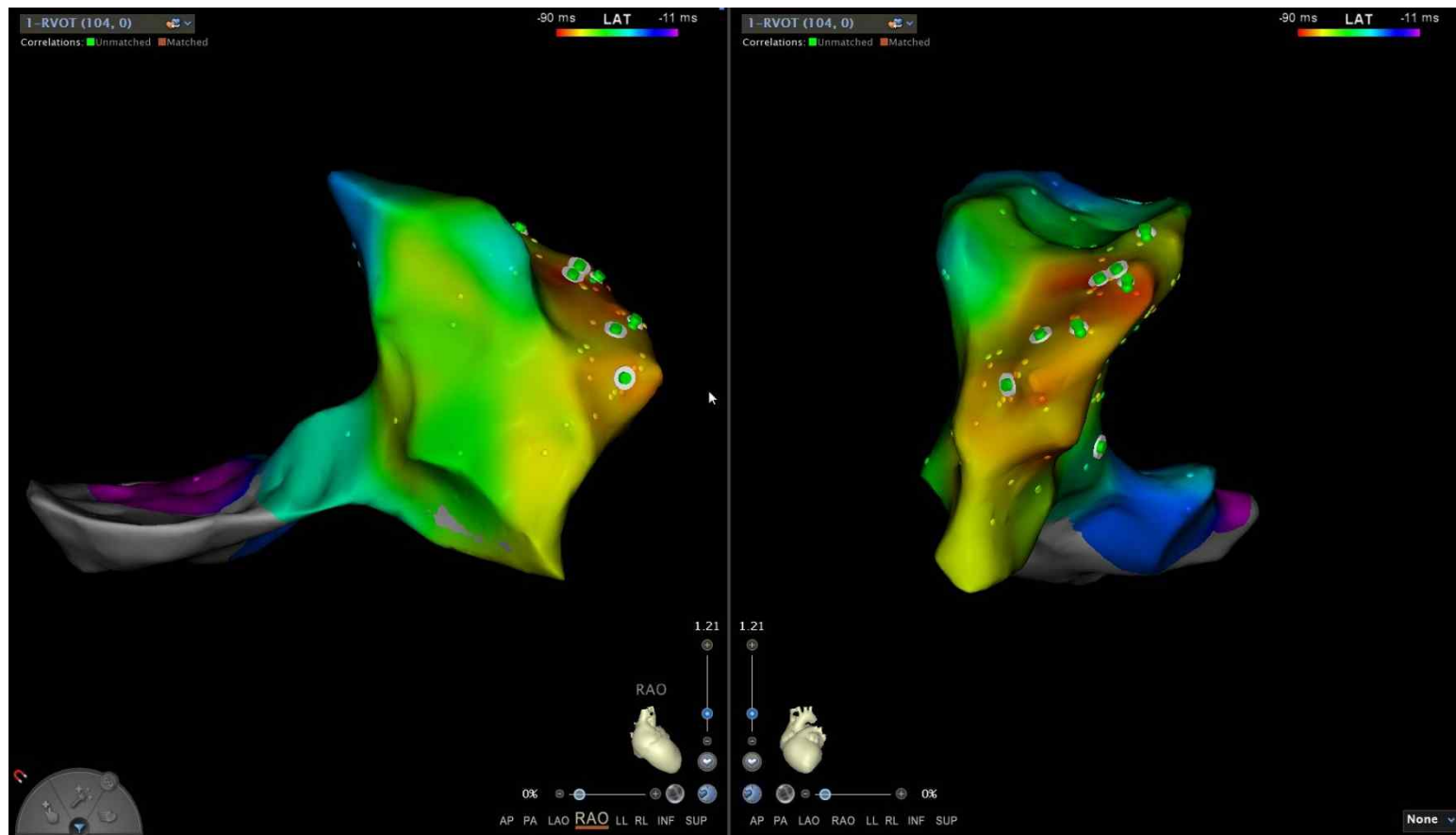
Case 2. F/75. 호흡곤란과 가슴 두근거림으로

Holter m; PVC - 22%, NSVT(+), T1



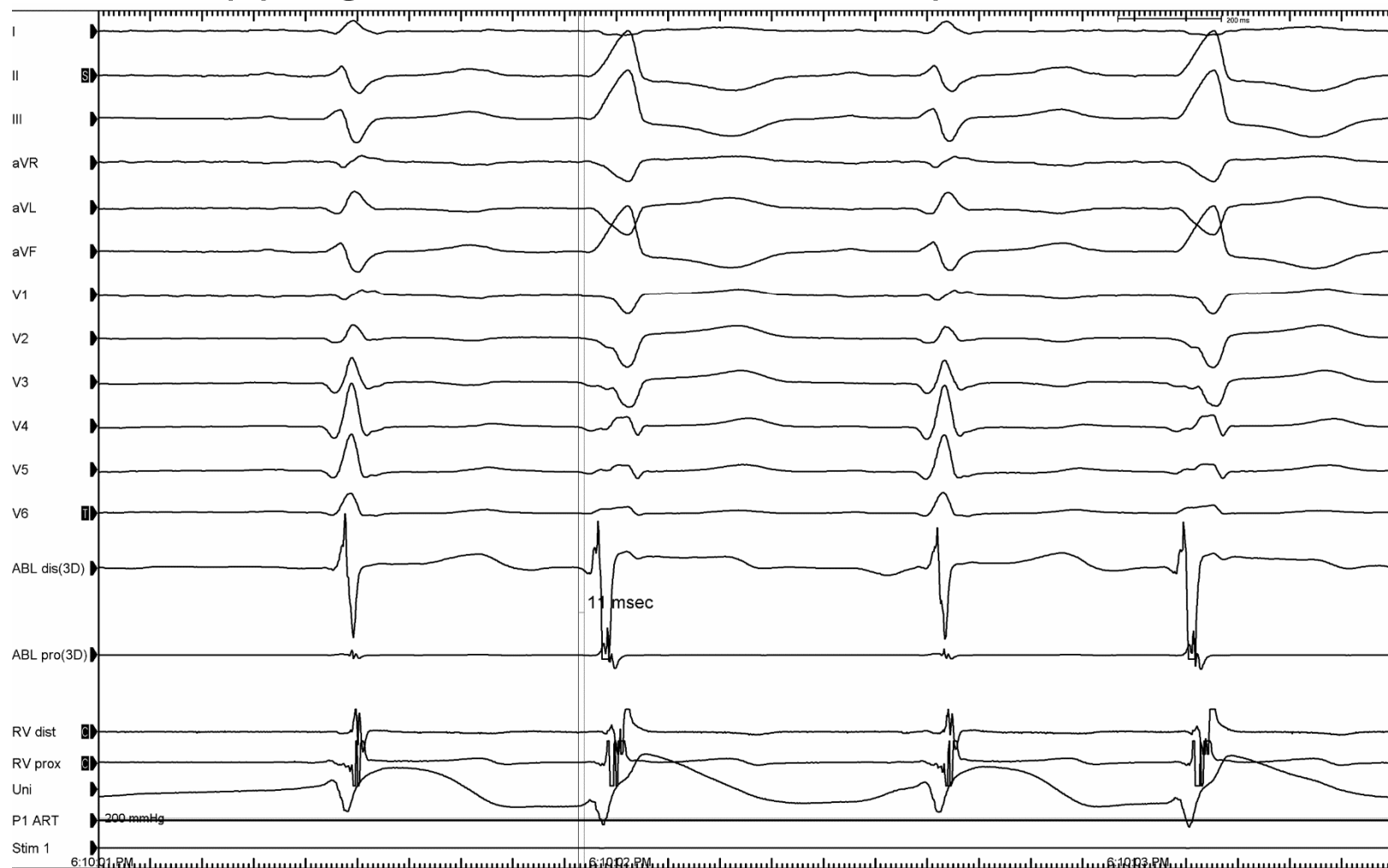
Activation Mapping

- 1st Mapping site: RVOT
- Early site: RVOT anterior septum

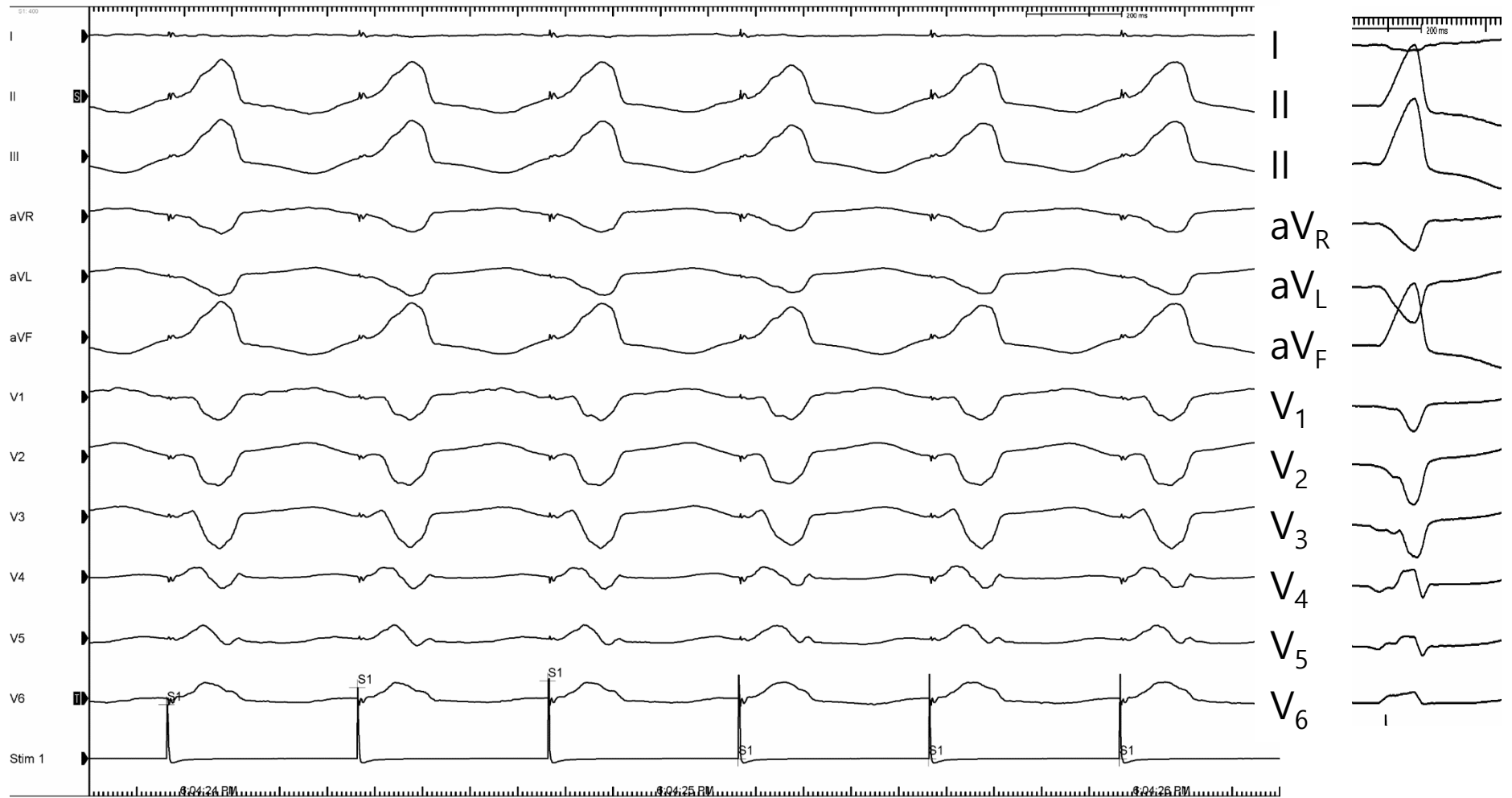


Activation Mapping

- 1st Mapping site: RVOT anterior septum



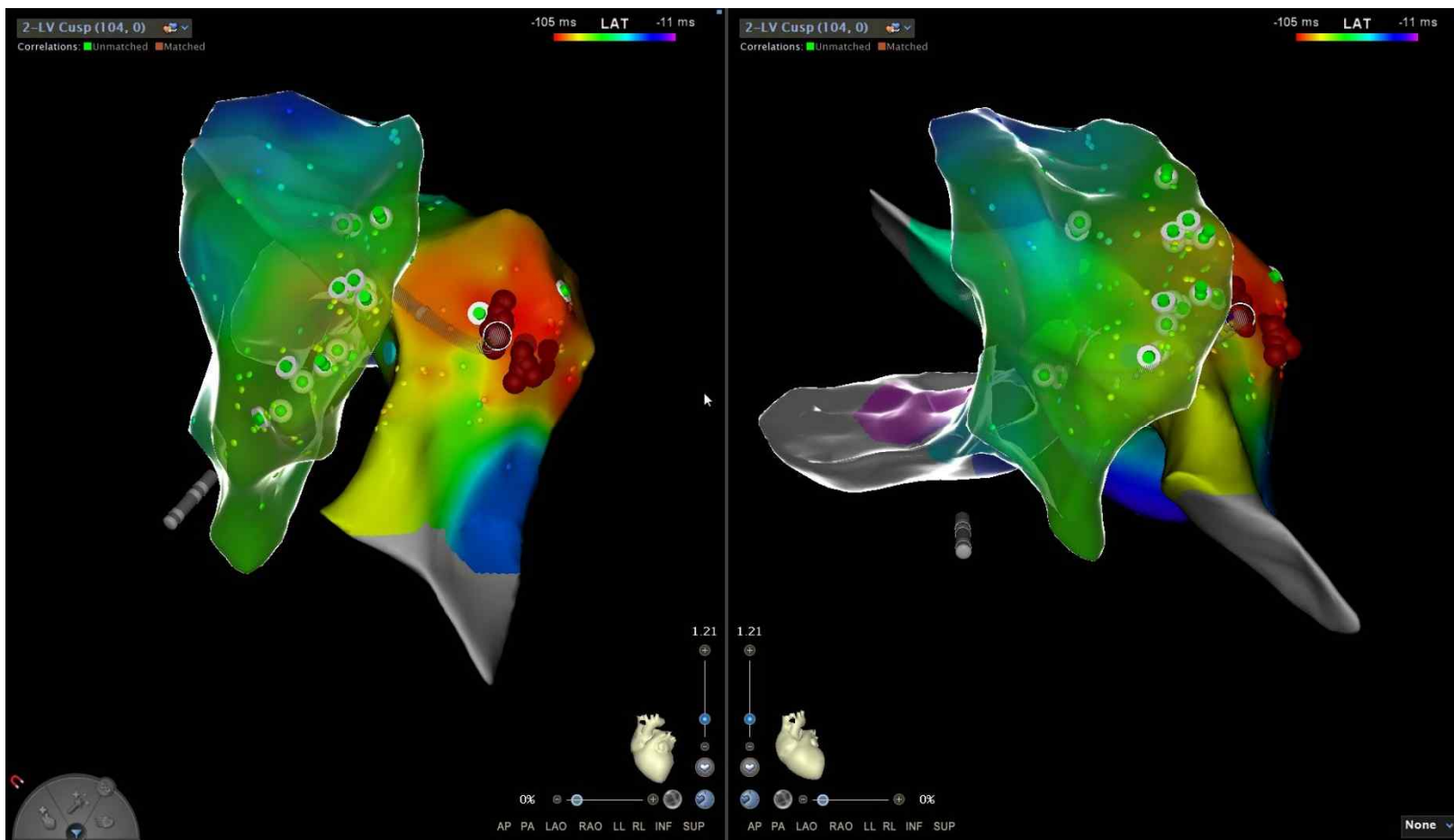
Paced Mapping



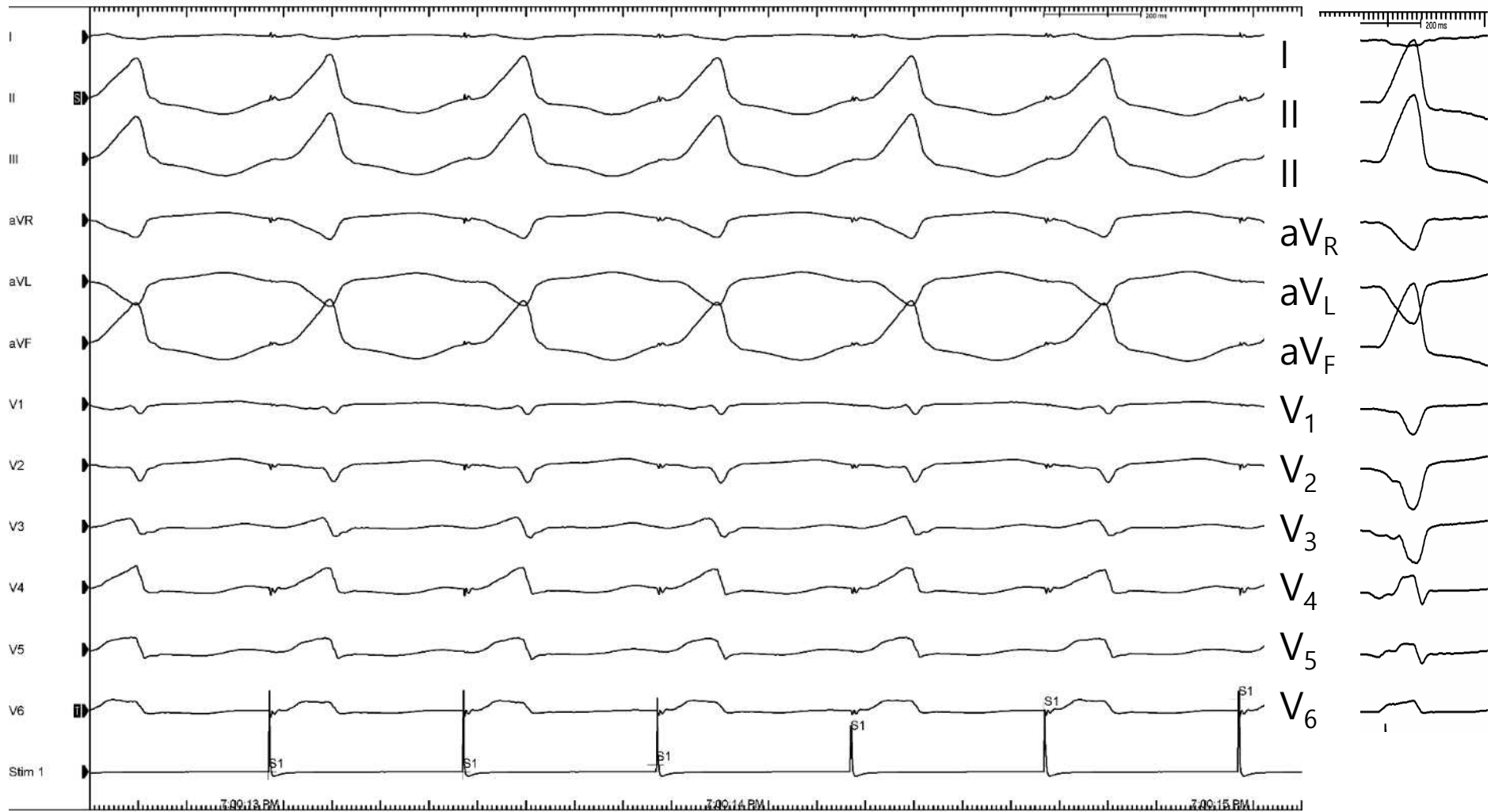
Pacemap; poor

Activation Mapping

- 2nd Mapping site: Aortic Cusp



Ablation Pacing : PASO not match



Good Potential : -30ms



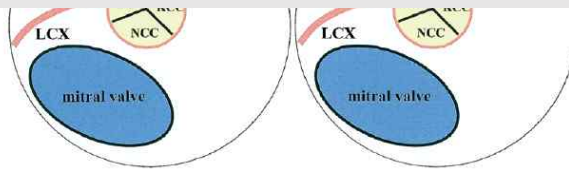
Successful Site - LCC



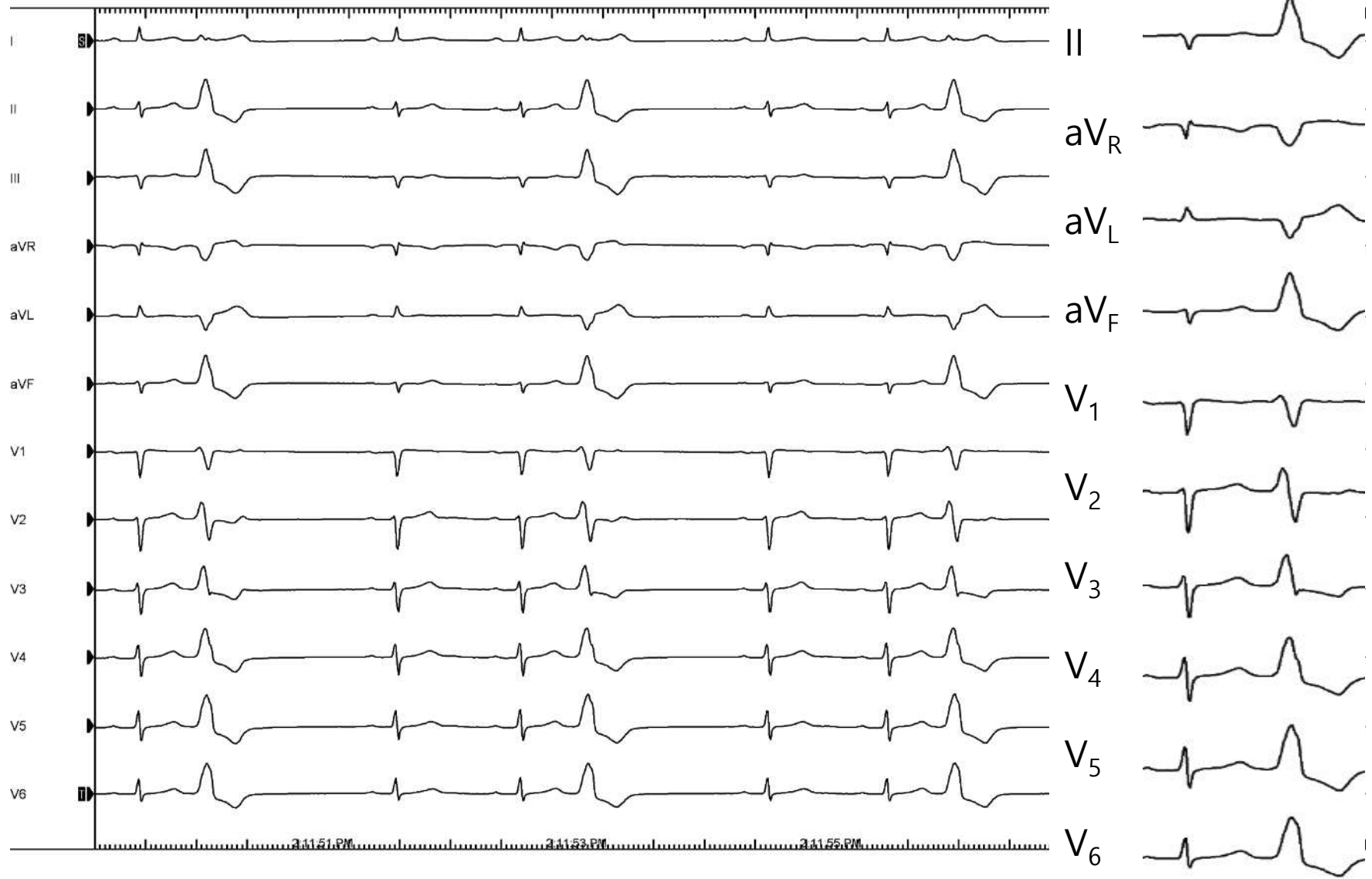
Preferential Conduction Across the Ventricular Outflow Septum in Ventricular Arrhythmias Originating From the Aortic Sinus Cusp

- 20% of VA in ASC origin:
 - poor pacemap in both ASC & RVOT
- RVOT 라고 생각했으나 earliest ventricular activation 이 -30 msec 이상인 곳이 없다면 LVOT로 과감히 이동할 것!

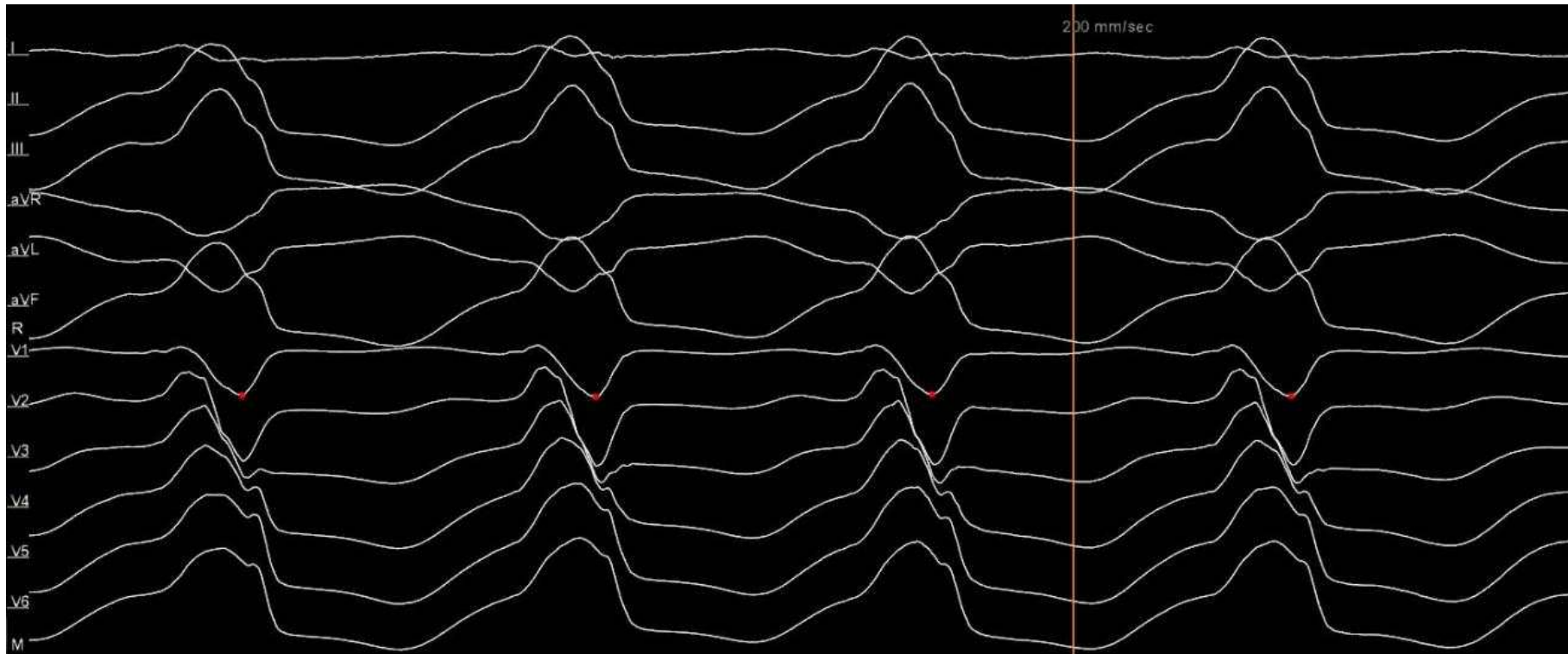
전제조건; dense mapping and paing



Case 3. M/42. 가슴이 심하게 두근거림 호소. ECG상



Spontaneous VT



Paced Mapping

- Site: RVOT anterior septum



Rt. side PASO 98%

Activation Mapping

- Early site: RVOT anterior septum
- Ablation site: RVOT anterior septum → no effect



Activation Mapping

- No response



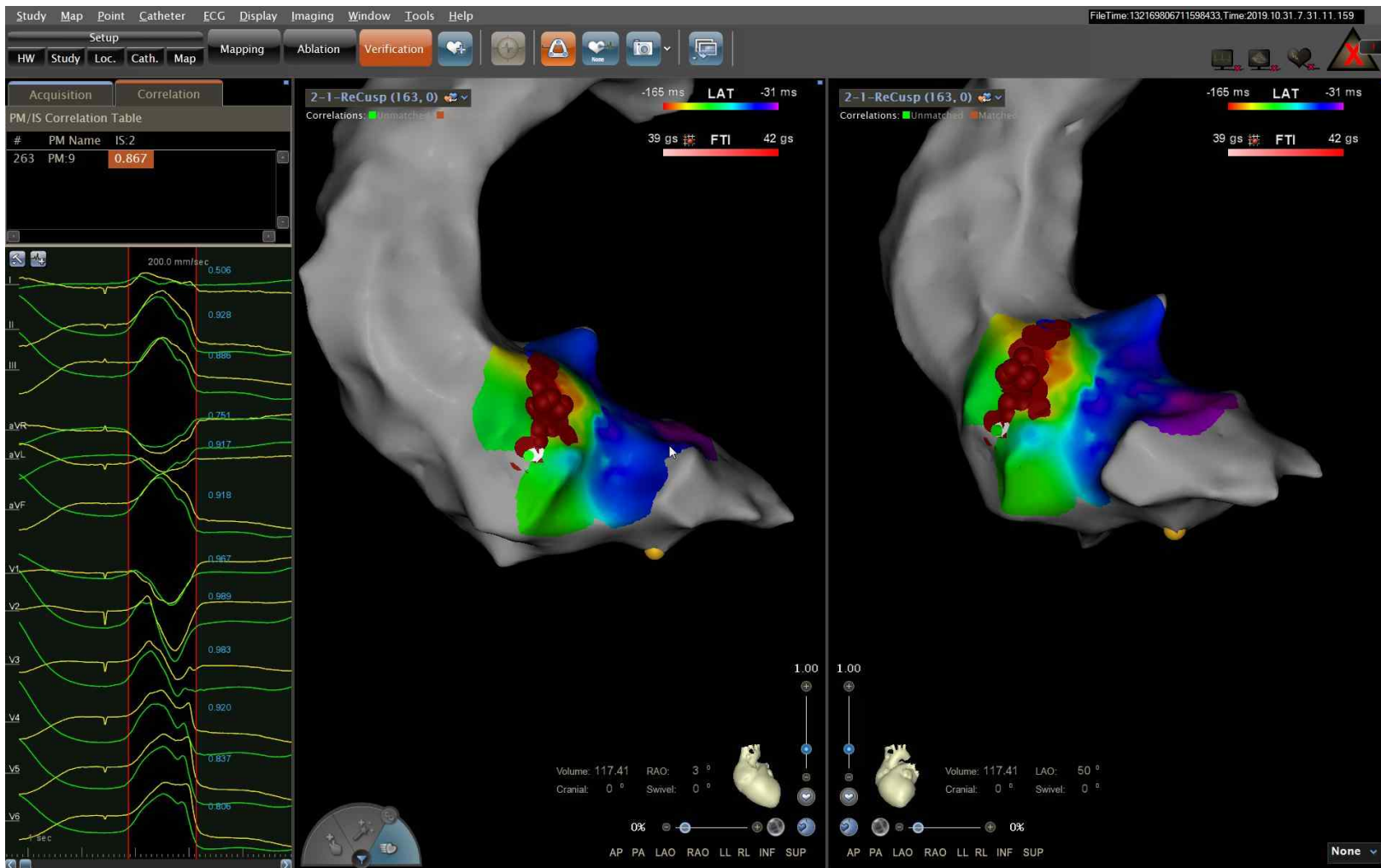
Activation Mapping

- 2nd mapping site: Aortic Cusp
- Early site: RCC



PASO(Pacing Software)

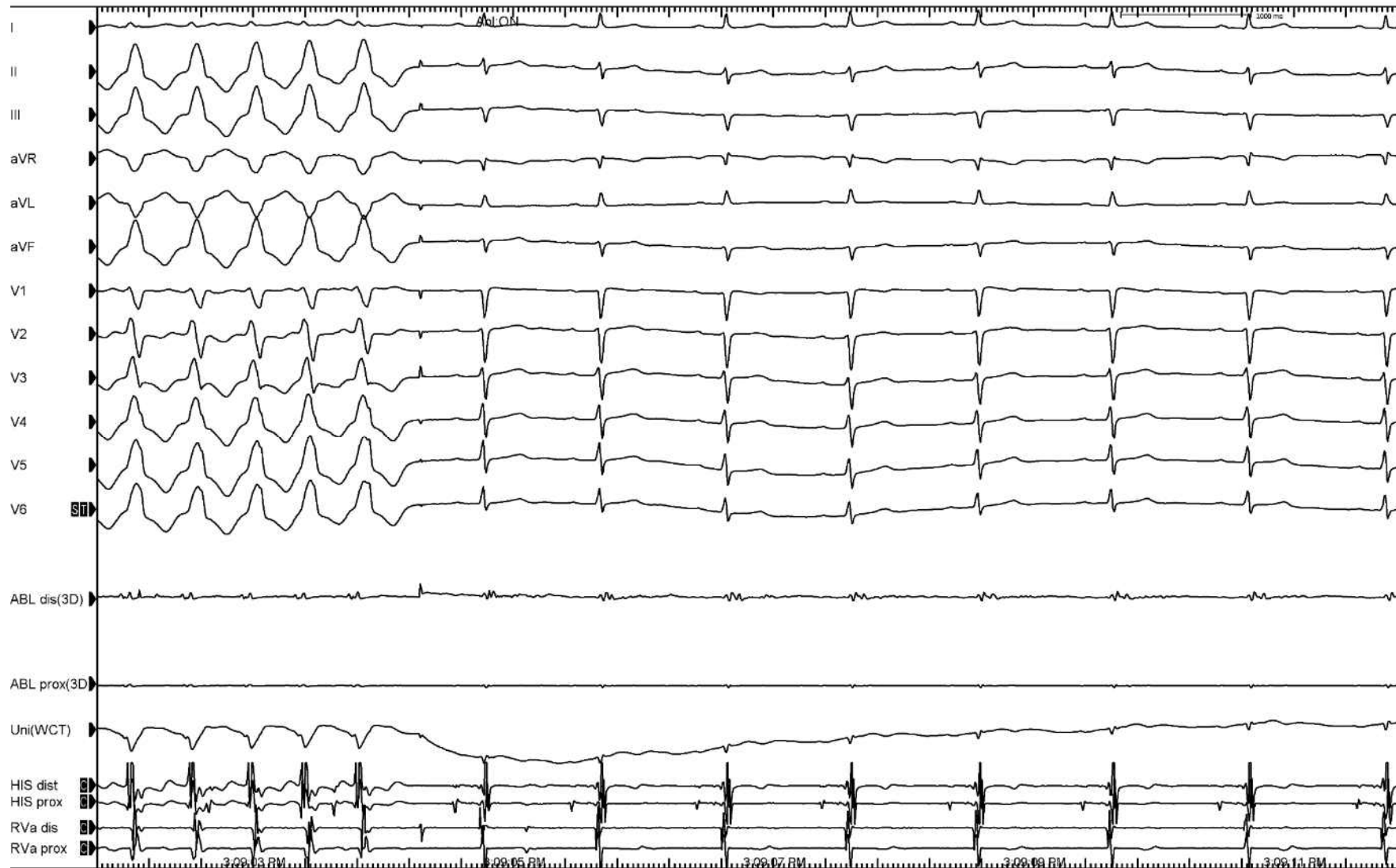
- PACE map site: RCC
- Best Correlation rate: 86.7 %



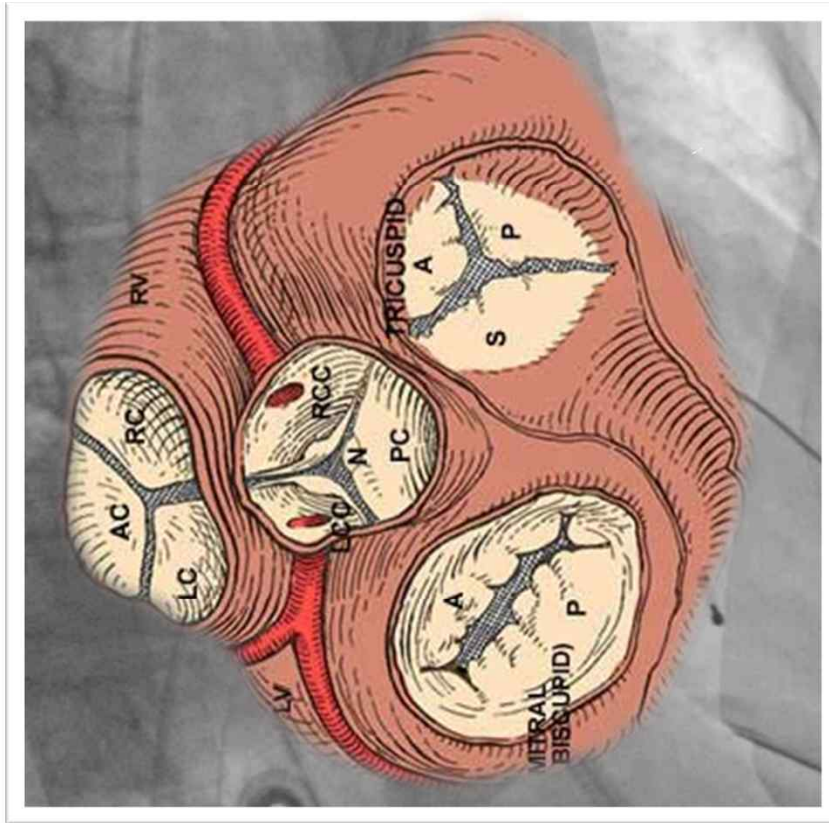
Nice potential during VT : -41ms



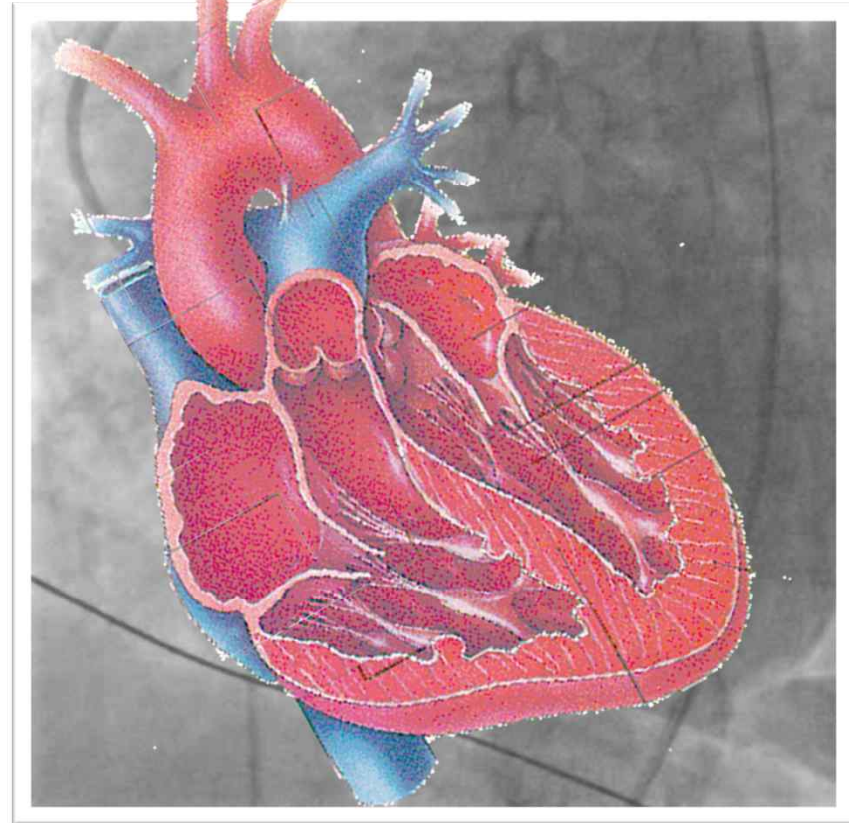
Successful Site - RCC



Successful Site - RCC



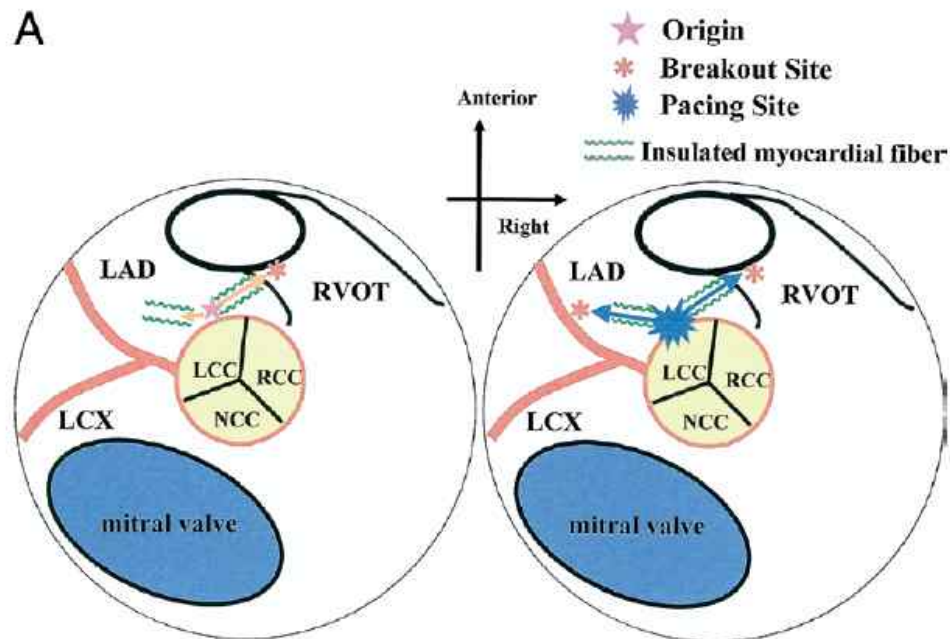
RAO



LAO

Preferential Conduction Across the Ventricular Outflow Septum in Ventricular Arrhythmias Originating From the Aortic Sinus Cusp

Takumi Yamada, MD,* Yoshimasa Murakami, MD,† Naoki Yoshida, MD,† Taro Okada, MD,† Takeshi Shimizu, MD,† Junji Toyama, MD,† Yukihiro Yoshida, MD,‡ Naoya Tsuboi, MD,‡ Masahiro Muto, MD,§ Yasuya Inden, MD,§ Makoto Hirai, MD,§ Toyoaki Murohara, MD,§ Hugh T. McElderry, MD,* Andrew E. Epstein, MD,* Vance J. Plumb, MD,* G. Neal Kay, MD*
Birmingham, Alabama; and Ichinomiya and Nagoya, Japan



25% of VT originated from ASC
→ breakout site in the RVOT

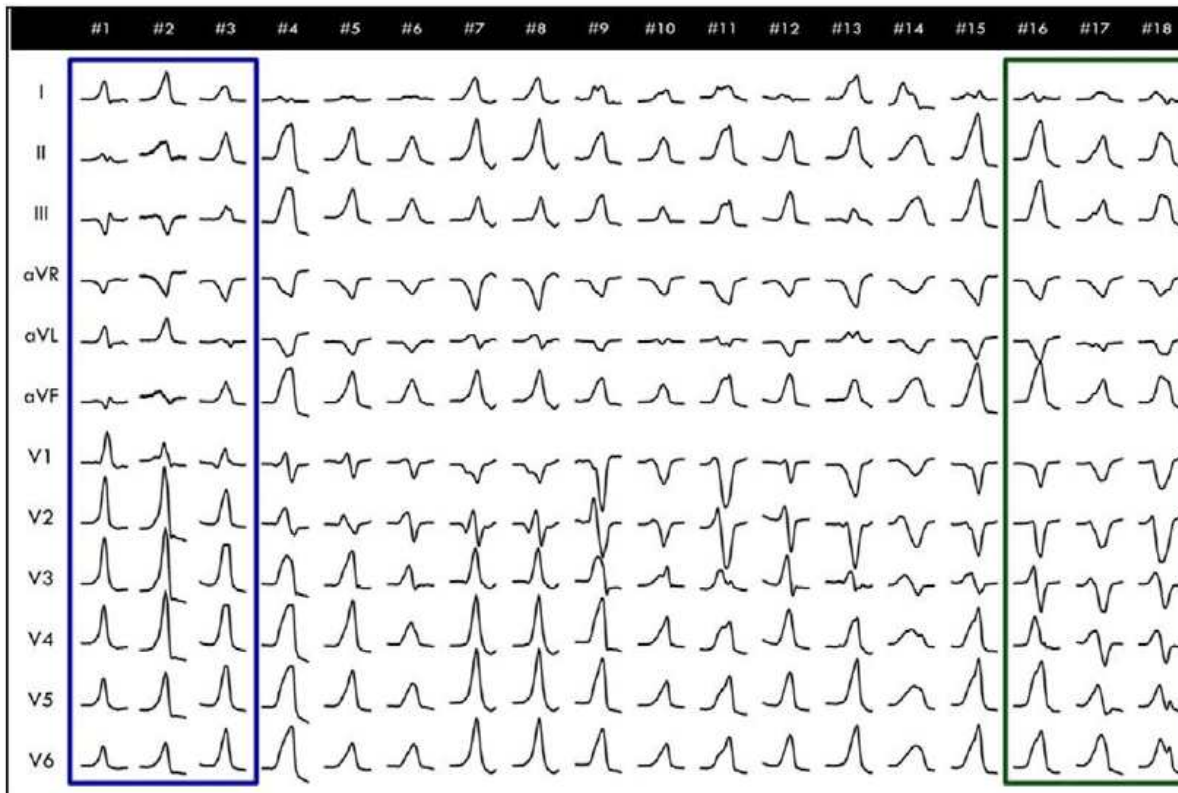
New electrocardiographic criteria for predicting successful ablation of premature ventricular contractions from the right coronary cusp



Sung Il Im^{a,1}, Kyoung-Min Park^{b,*2}, Seung-Jung Park^b, June Soo Kim^b, Young Keun On^b

^a Division of Cardiology, Department of Internal Medicine, Kosin University Gospel Hospital, Kosin University College of Medicine, Busan 602-702, Republic of Korea

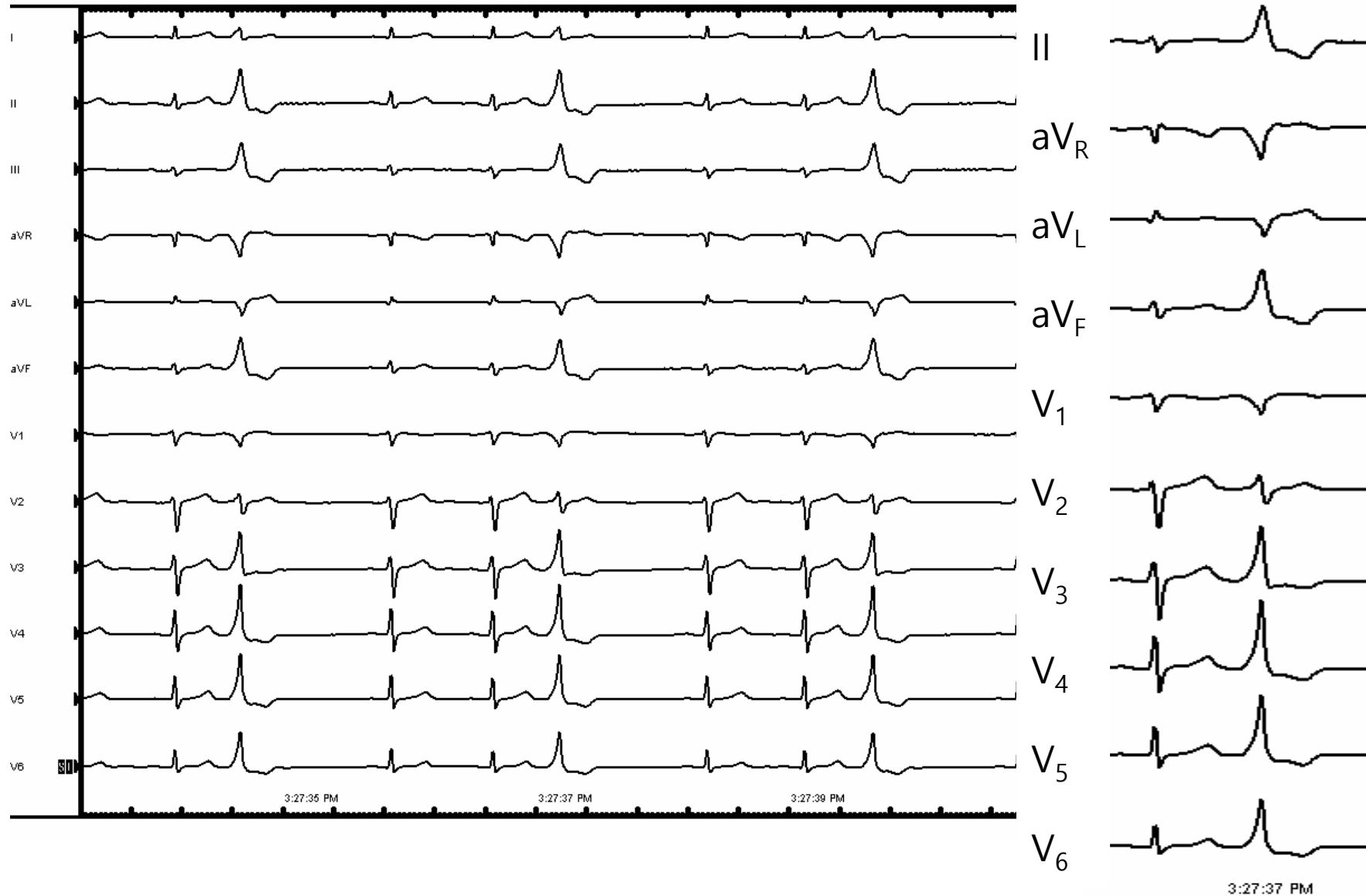
^b Division of Cardiology, Department of Medicine, Heart Vascular Stroke Institute, Samsung Medical Center, Sungkyunkwan University School of Medicine, Seoul, Republic of Korea



Lead I (+)

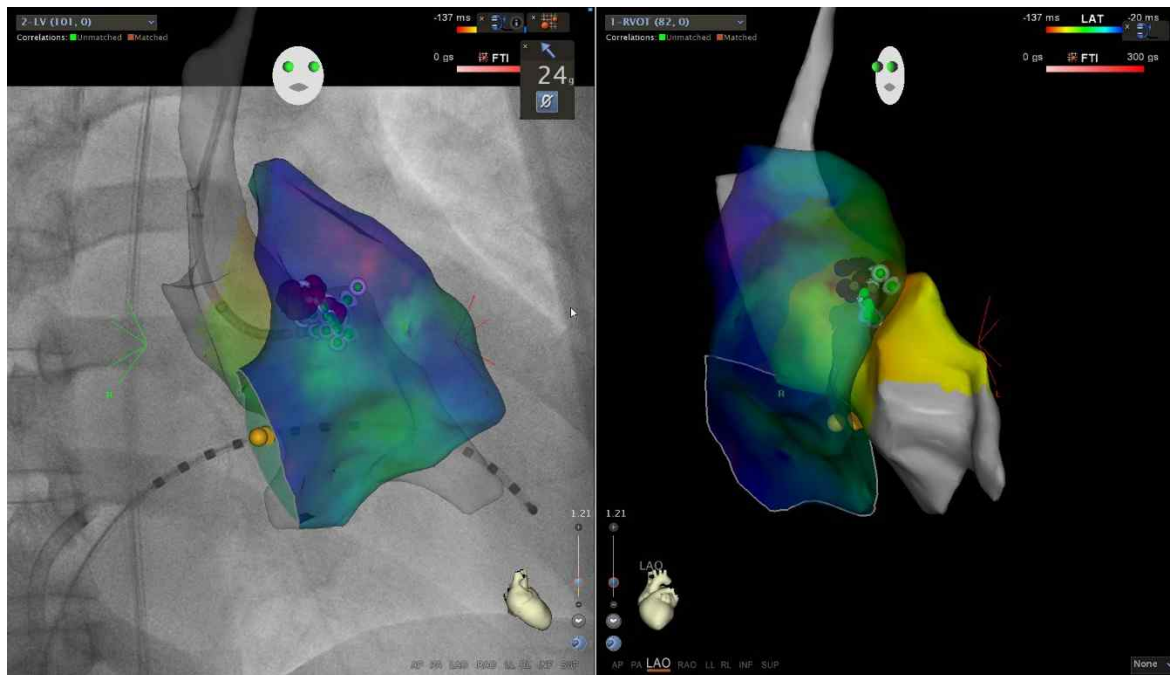
Case 4. M/41. 가슴이 심하게 '쿵' 하고 두근거림. |

Holter m; PVC -22% on medicatio ||



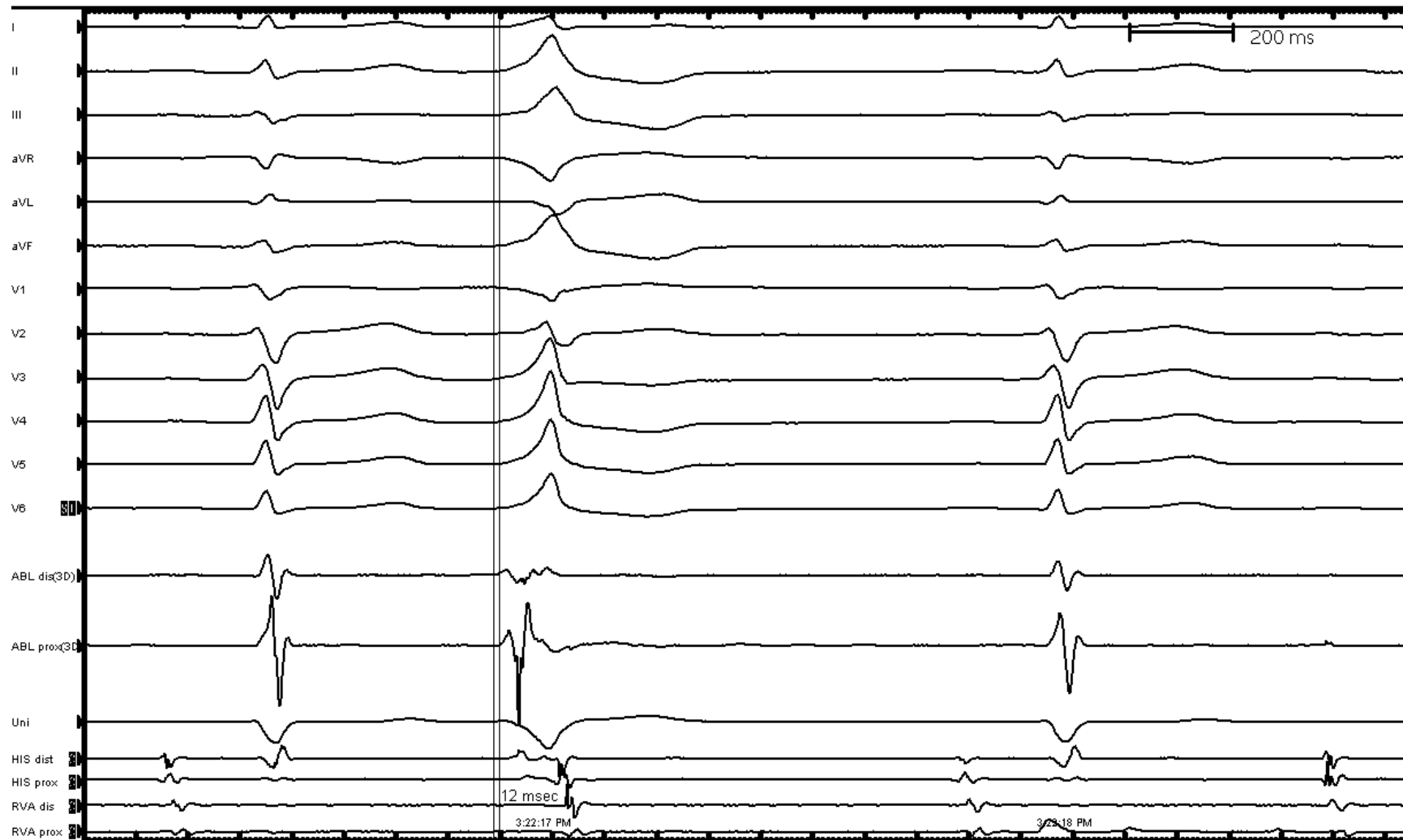
Activation Mapping

- Activation Mapping using SmartTouch SF™ catheter
- Mapping site: RVOT & Aortic cusp

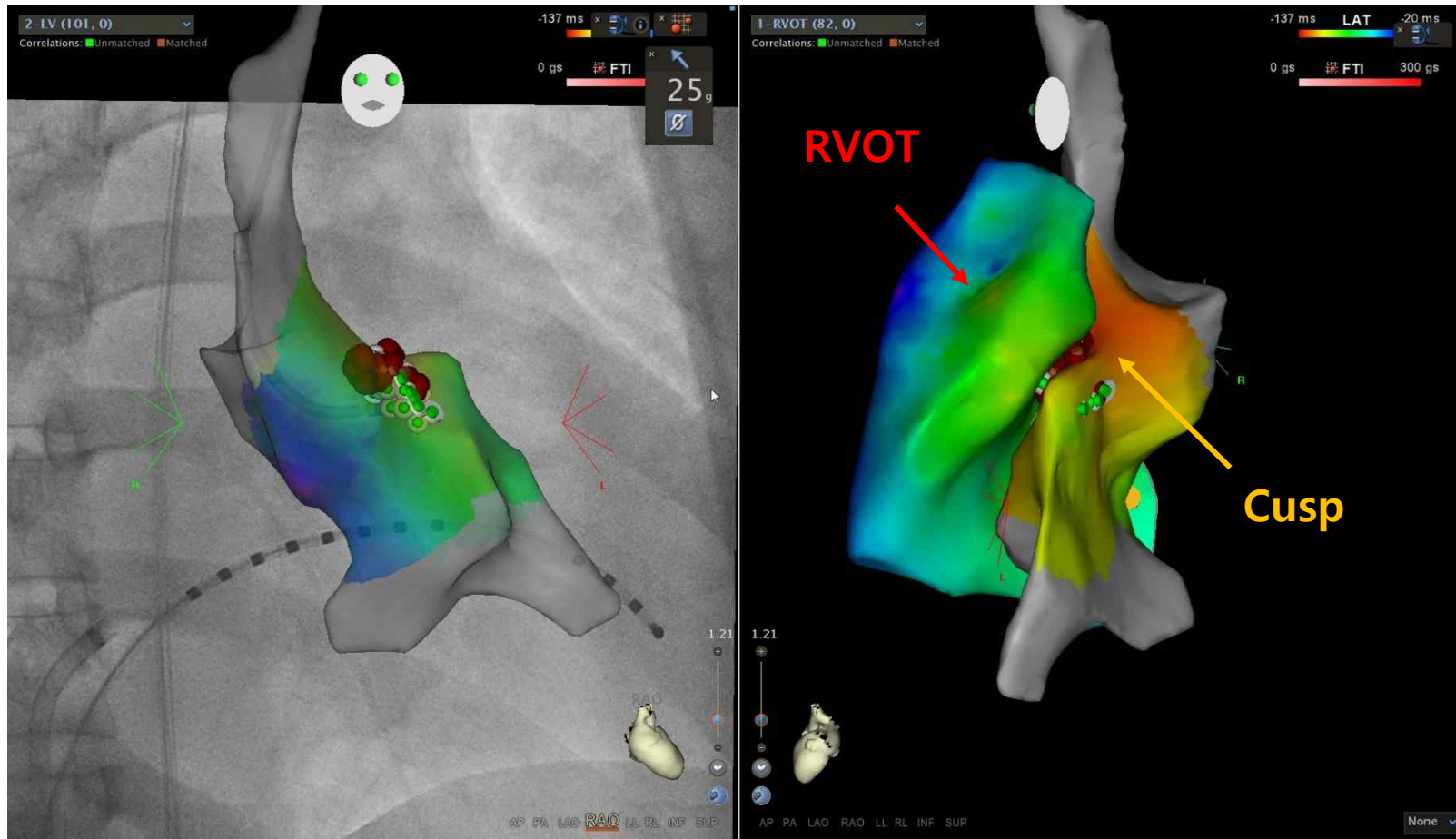


Activation Mapping

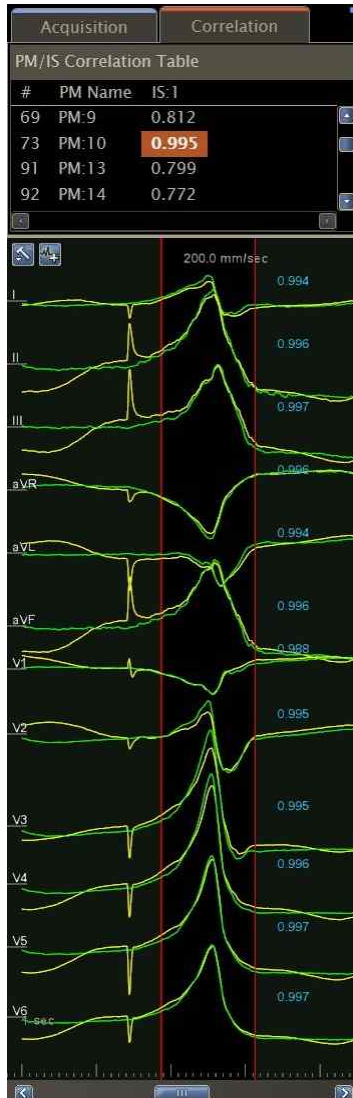
- Mapping site: RVOT -12ms



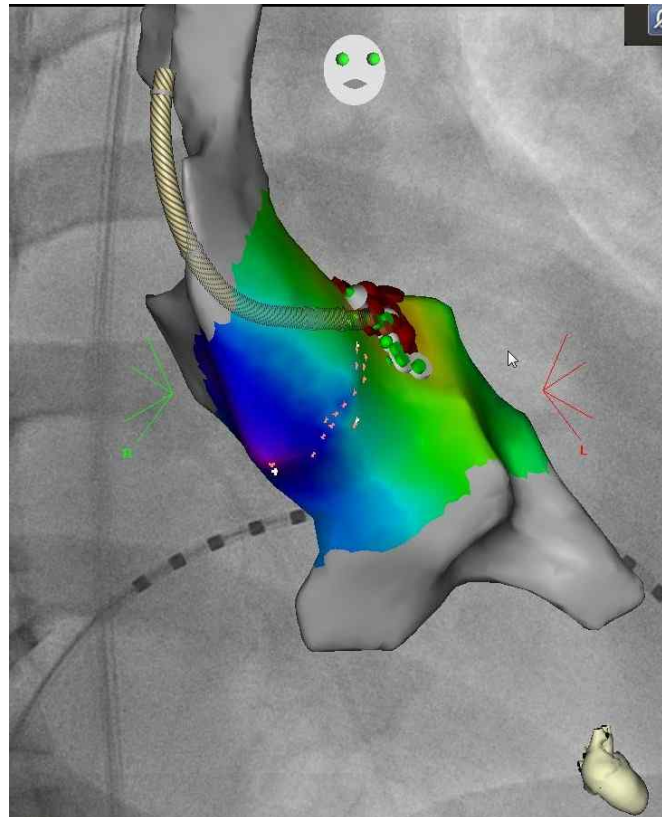
Activation Mapping



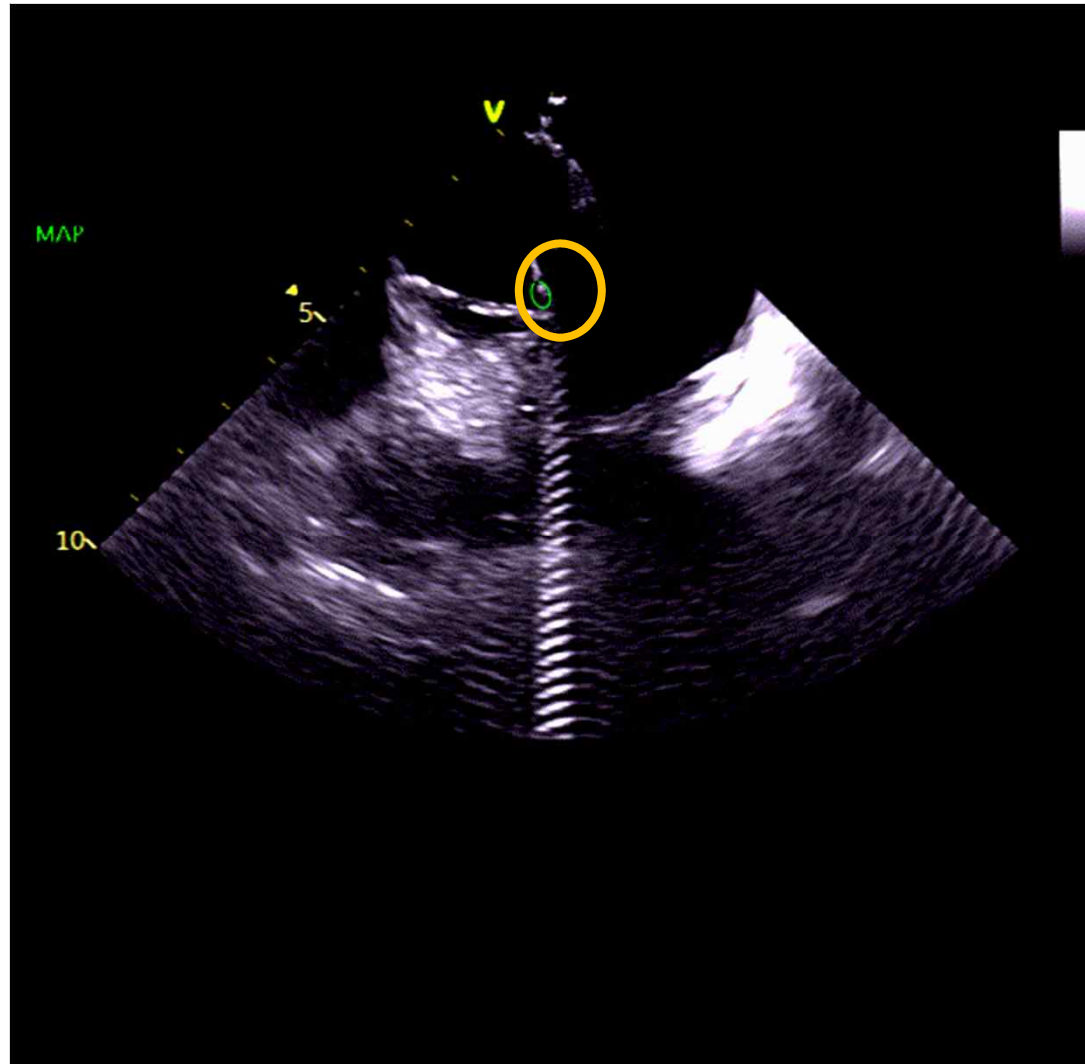
PASO(Pacing Software)



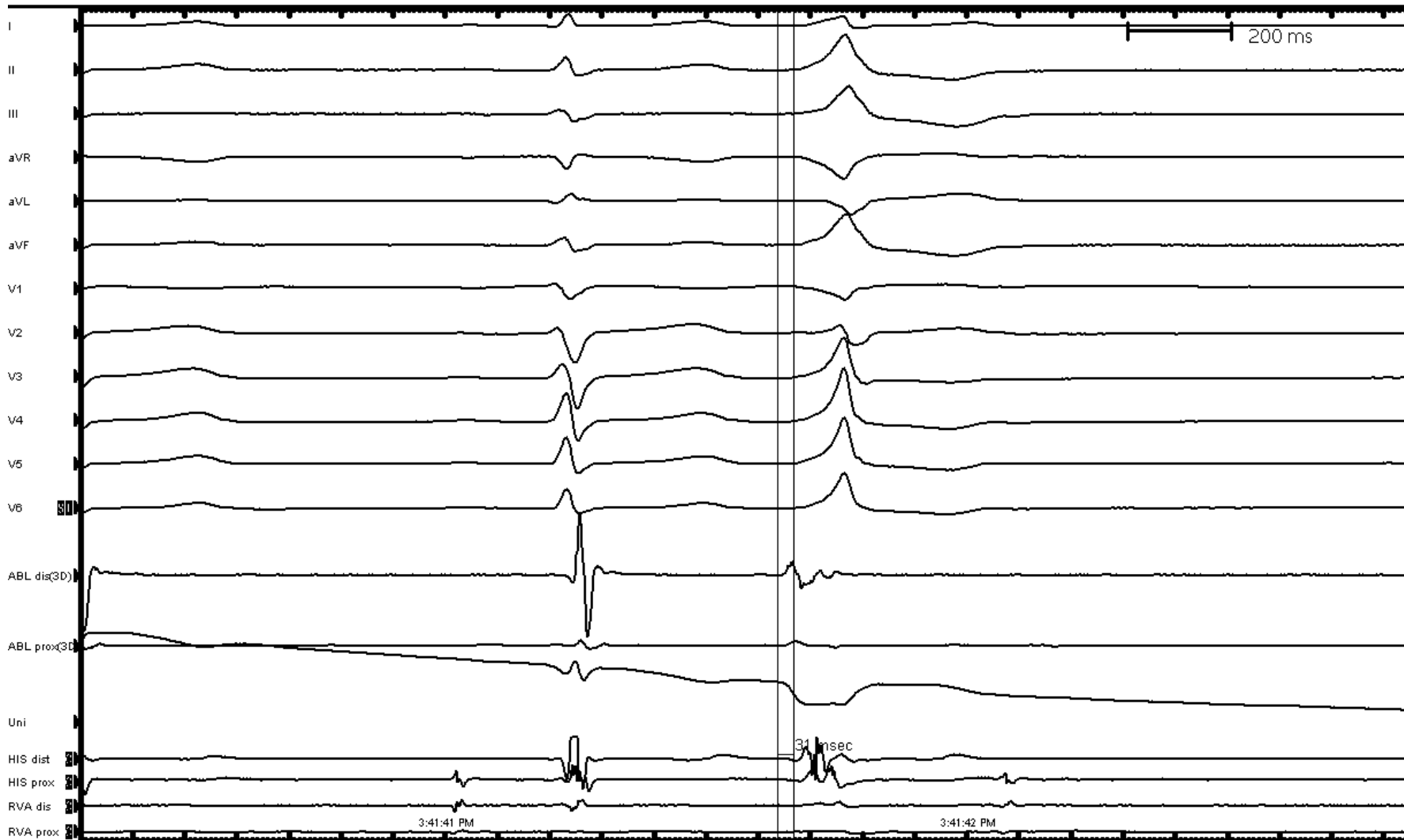
- PACE map site: RCC-LCC Junction
- Best Correlation rate: 99.5 %



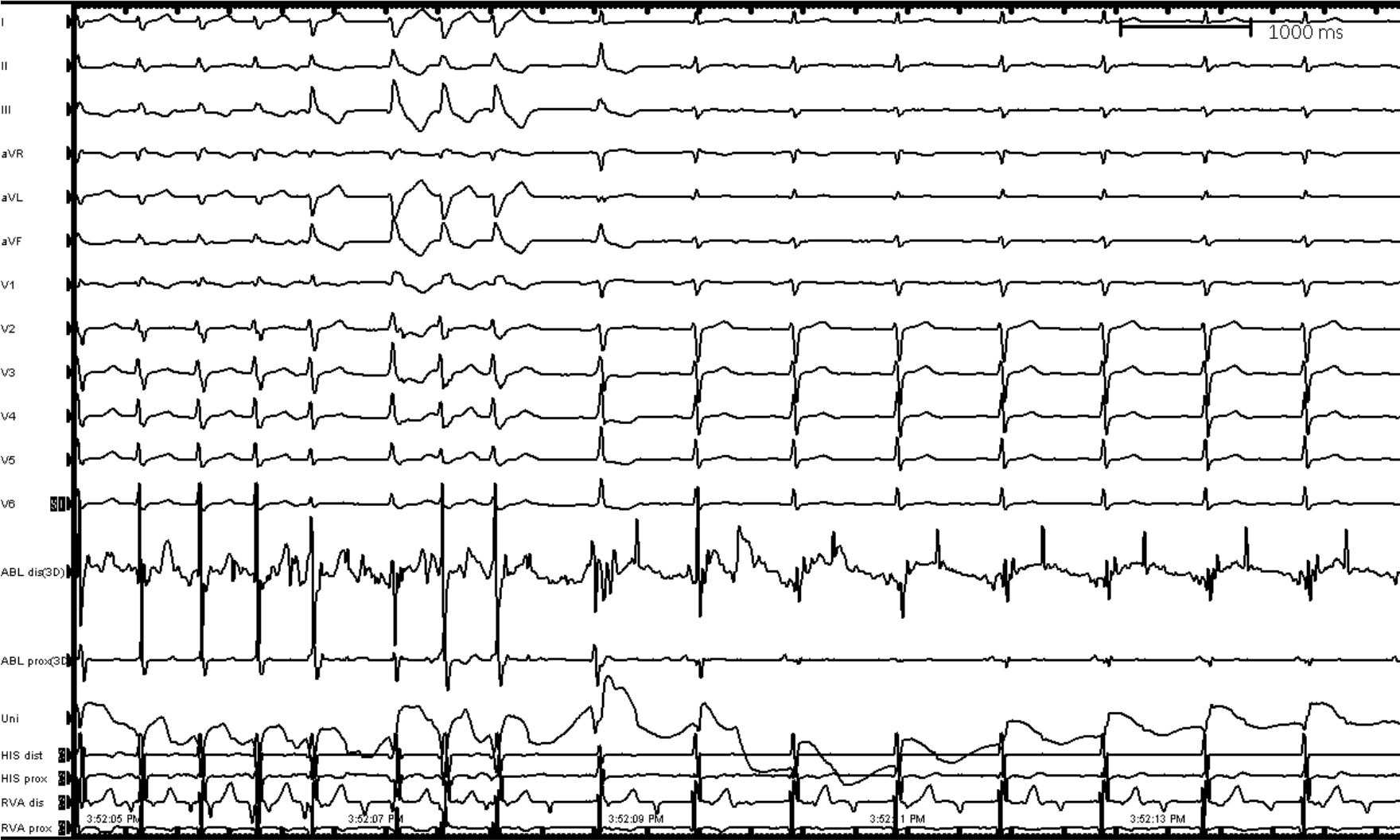
ICE – RCC & LCC Junction



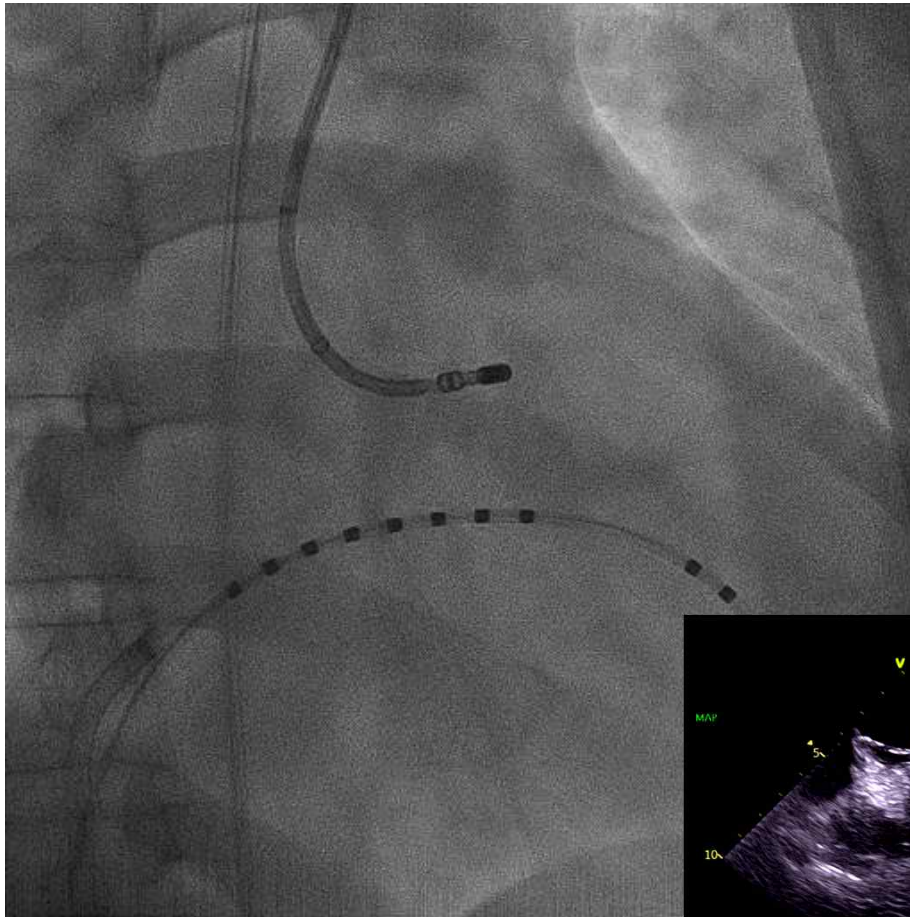
Good Potential : -31ms



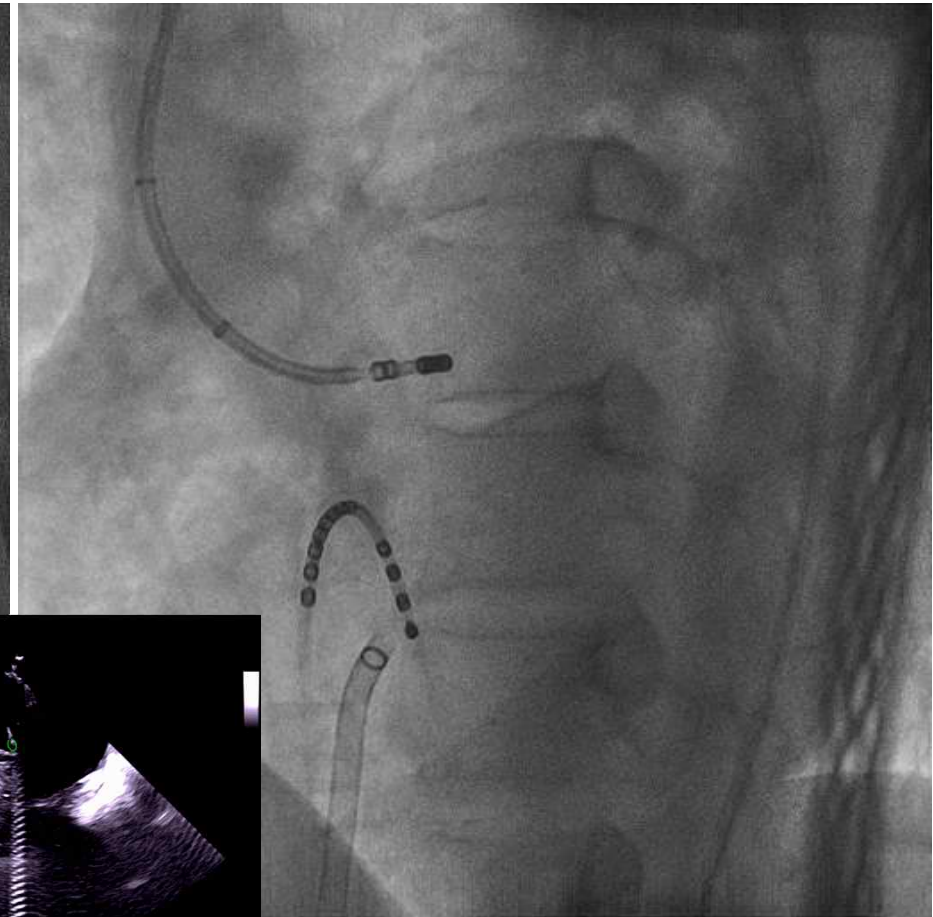
Successful Site – RCC & LCC Junction



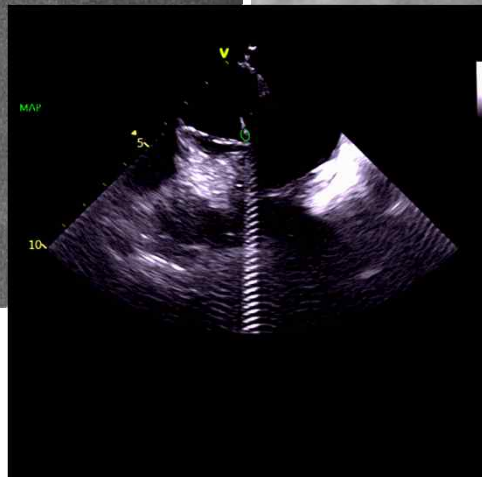
Successful Site – RCC & LCC Junction



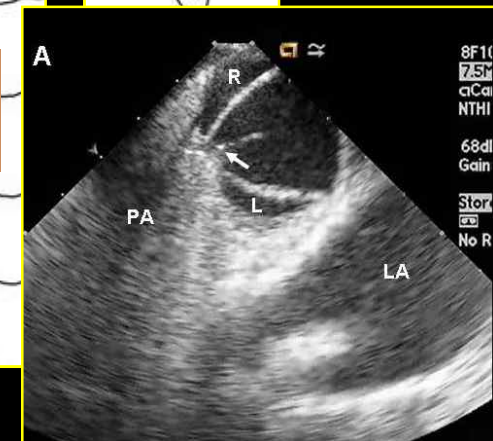
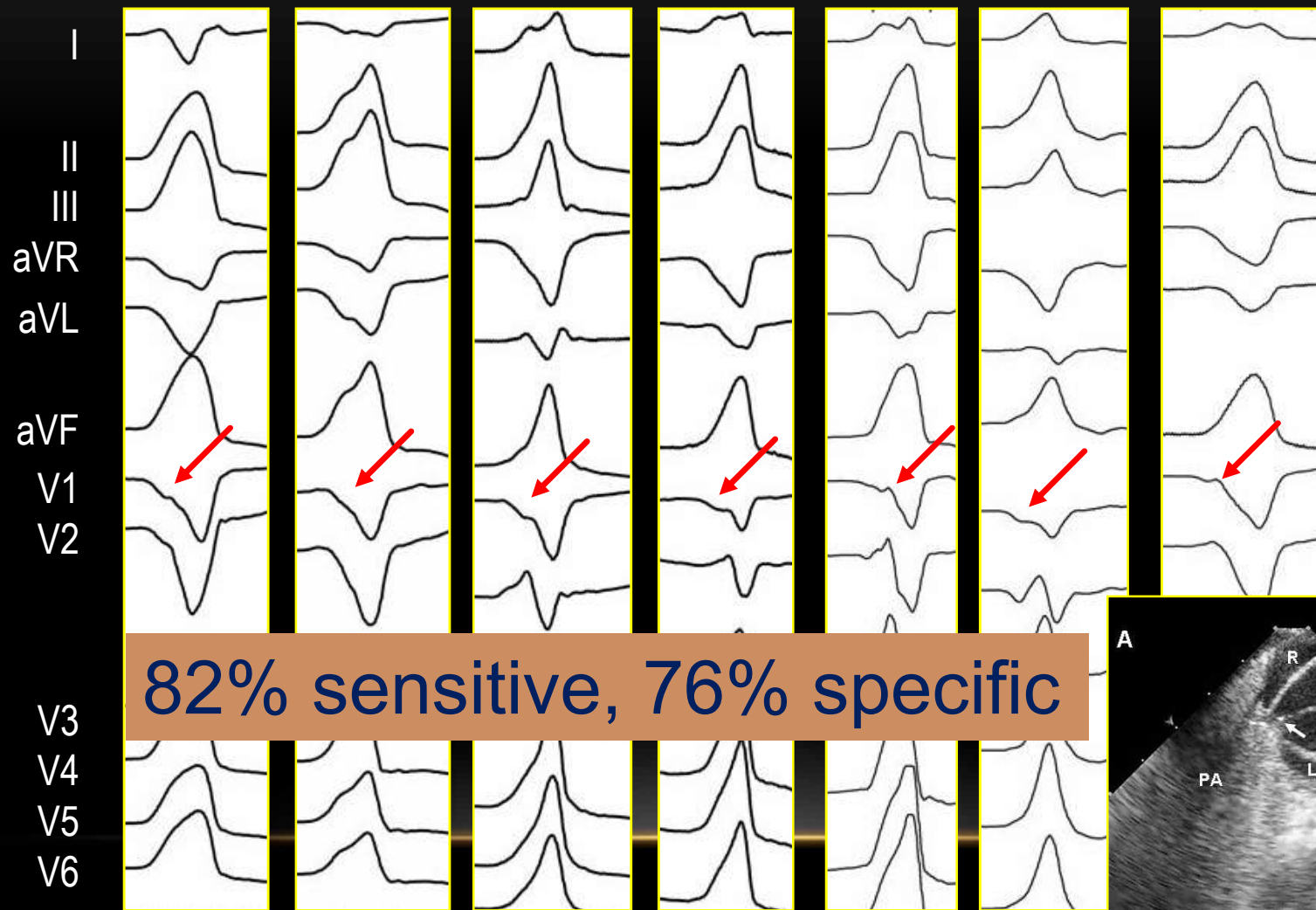
RAO



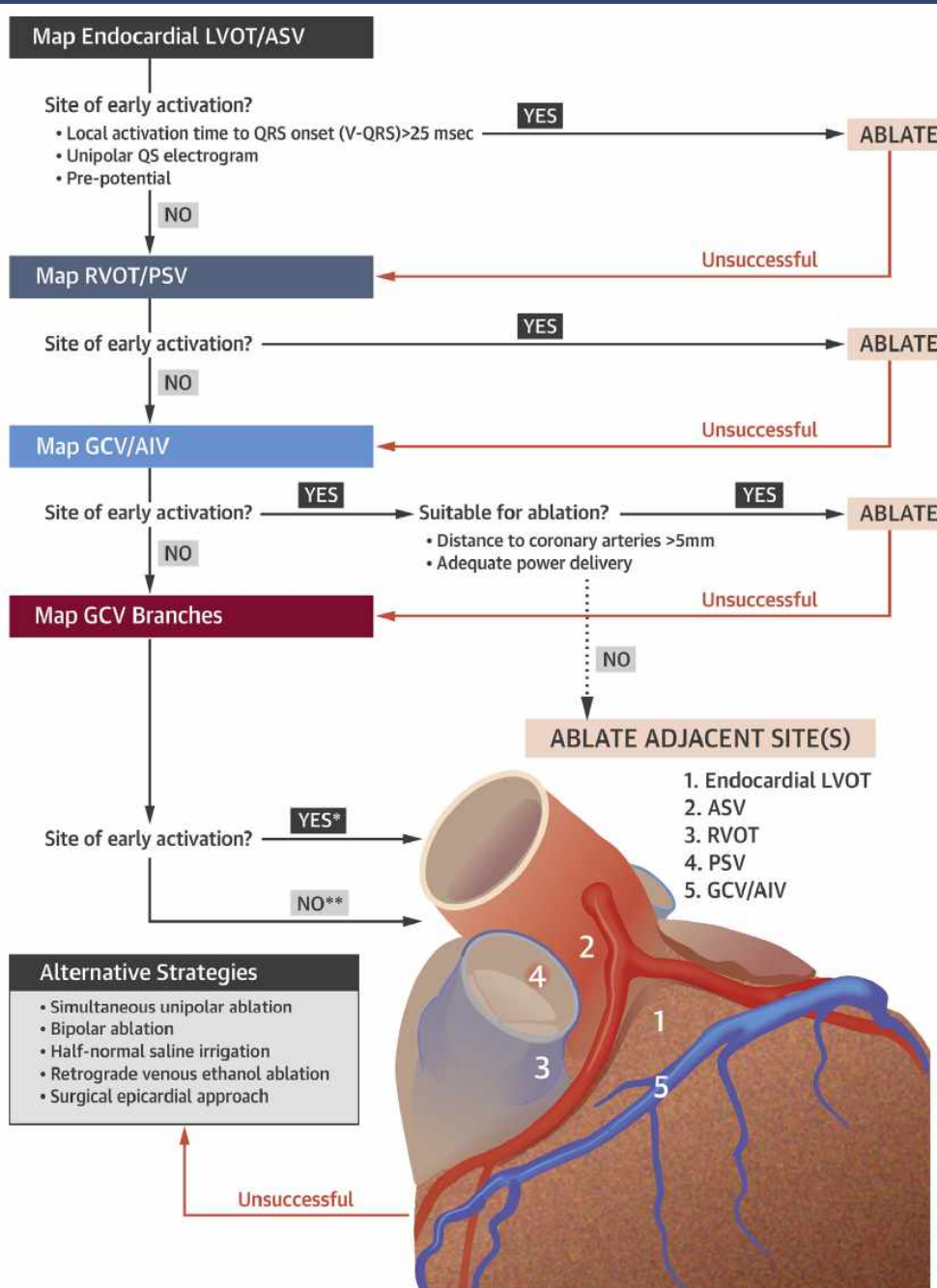
LAO



VT from R/L Coronary Cusp Junction – Notch in V1 Downstroke



Overview of Approach to Targeting LVOT Arrhythmias



Tips of aortic cusp VT ablation

- Anatomical considerations
- ECG clues to recognize aortic cusp origin
- Dense mapping; early **potential** (-30msec)
& pacemap (>10/12),
PASO (>95%)
- Contact; Intracardiac EchoCG