Hemodinamik Unstabil VT’de Haritalama

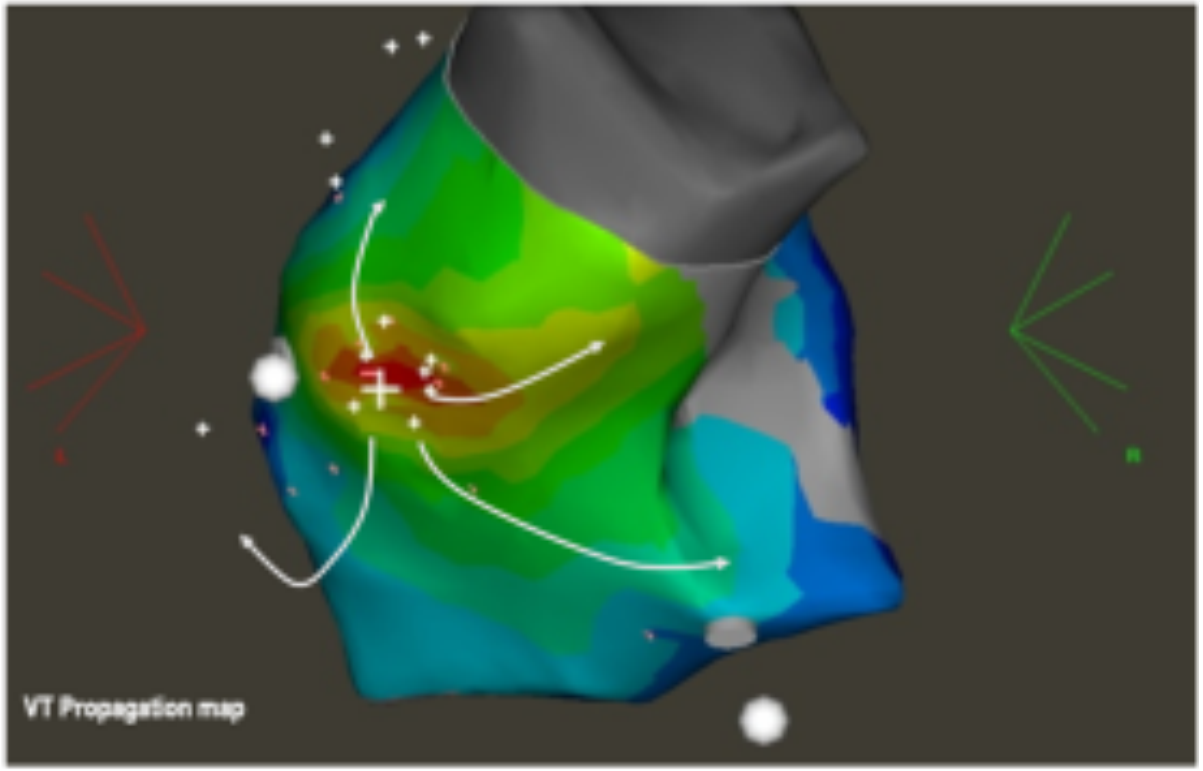
(PACE MAP, Stratejik Haritalama)

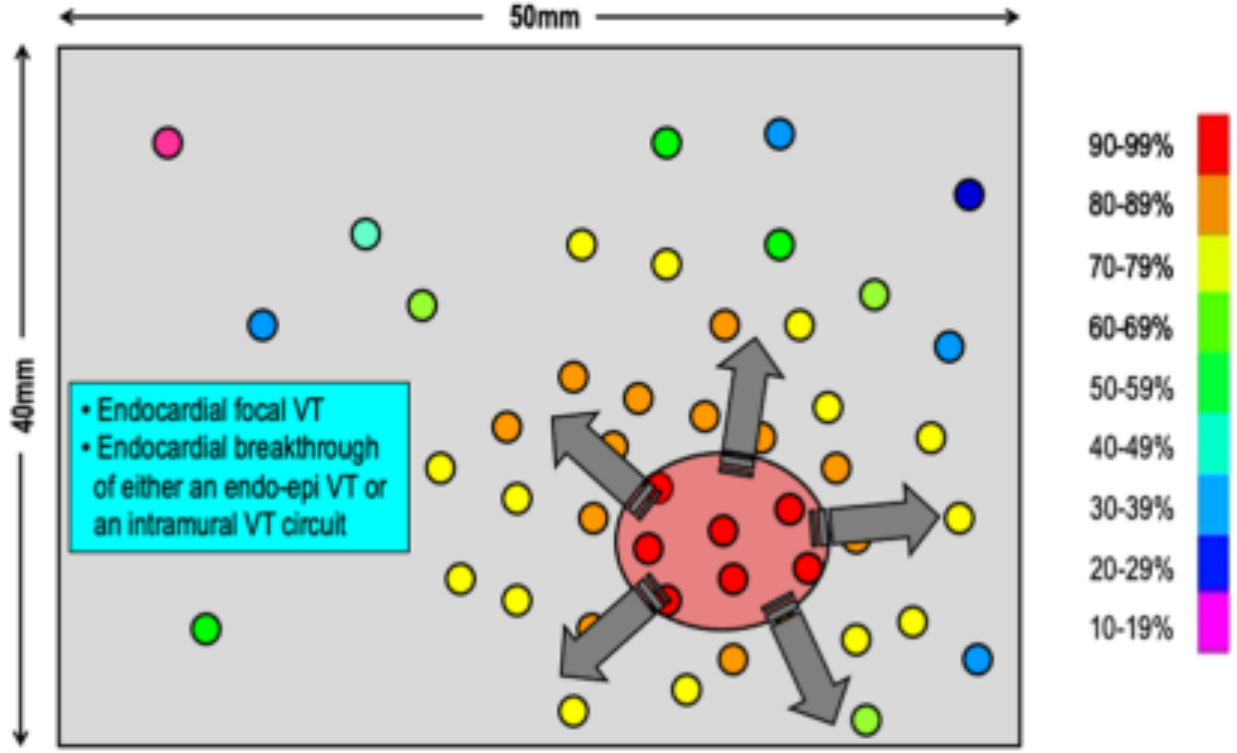
Dr. Emin Evren Özcan, PhD.

Dokuz Eylül Üniversitesi
Kalp Ritim Bozuklukları Araştırma ve Uygulama Merkezi

DOKUZEYLÜL ÜNİVERSİTESİ HASTANESİ

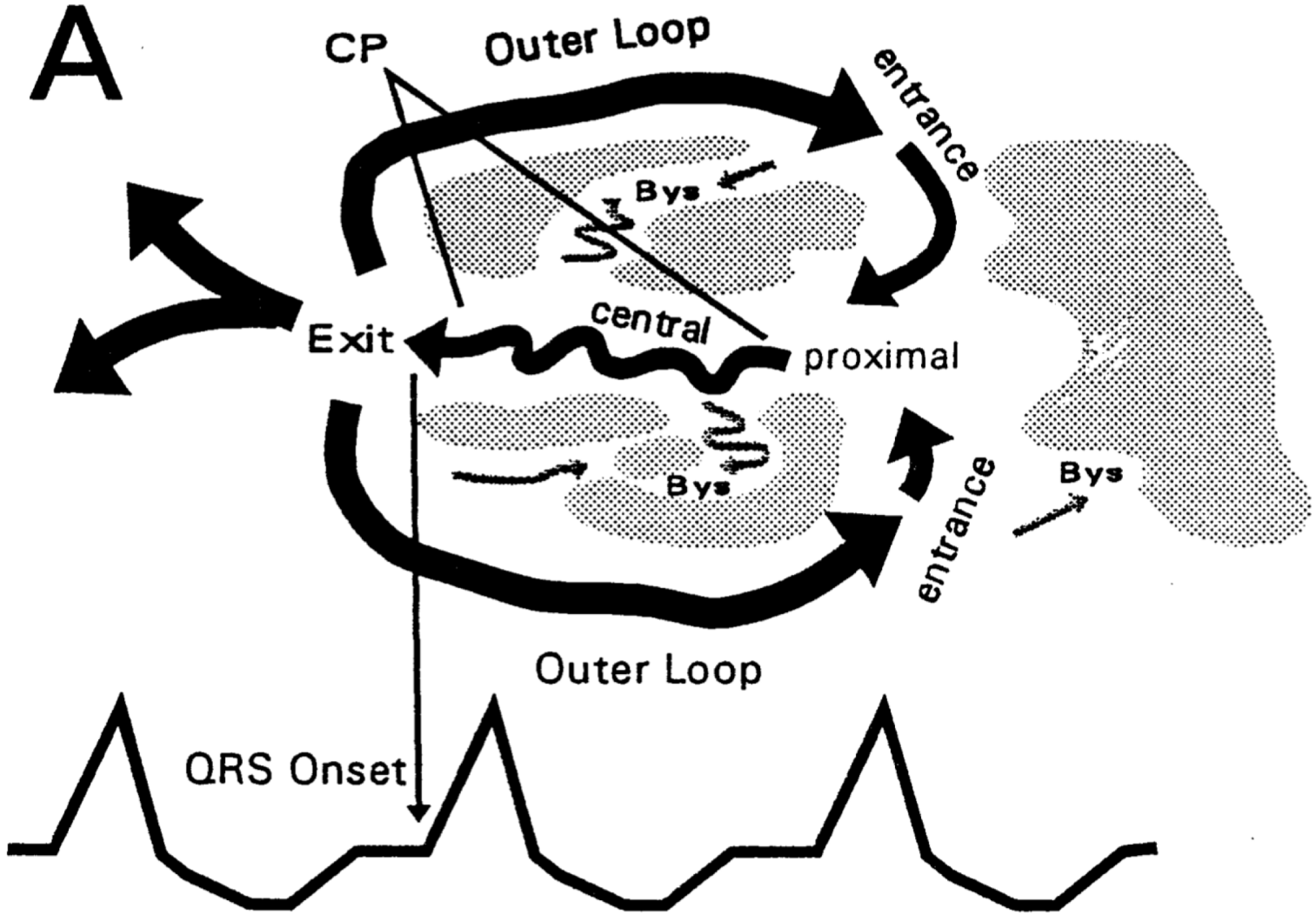
Pace Mapping Focal Patern



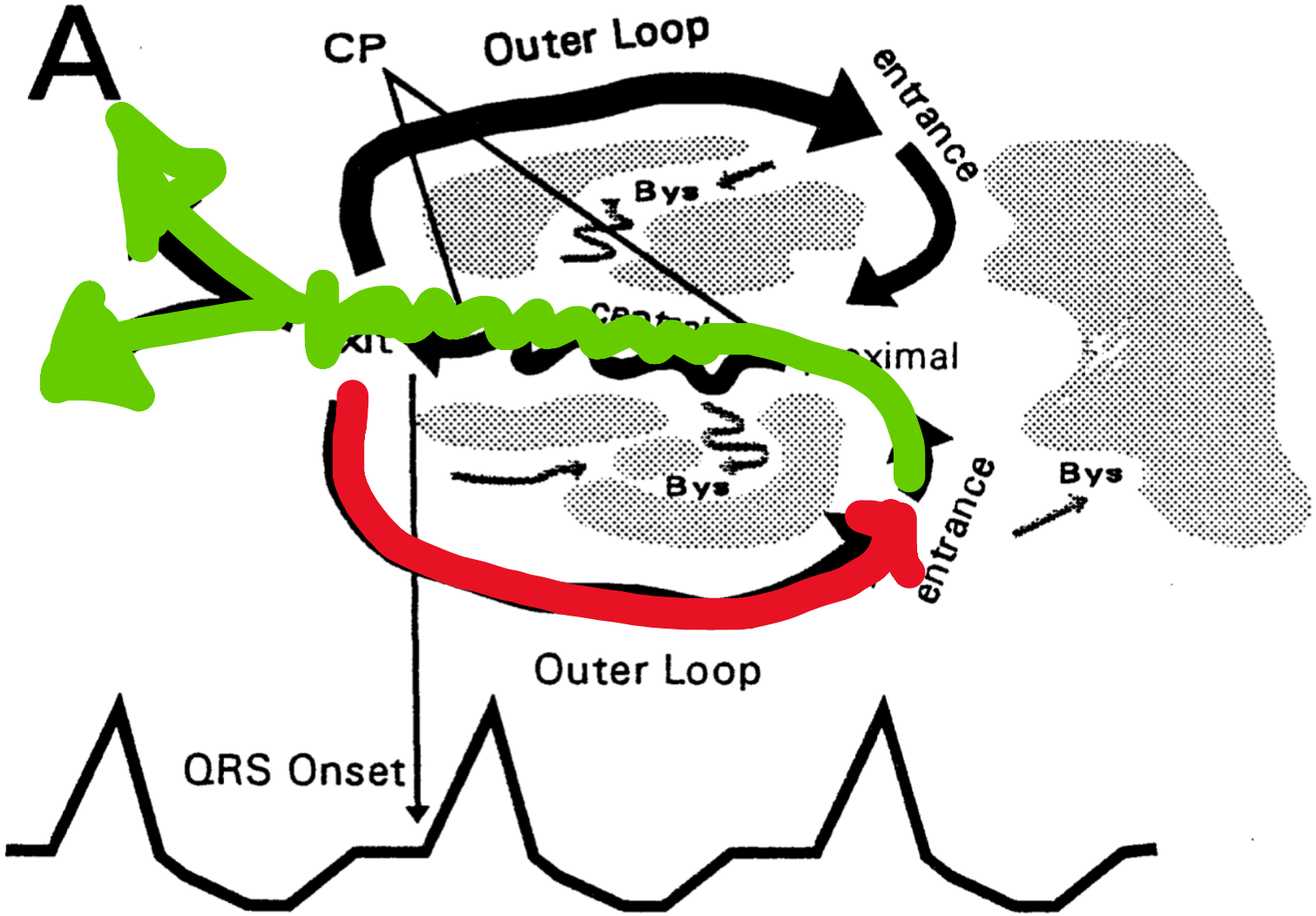


DOKUZEYLÜL ÜNİVERSİTESİ HASTANESİ

Guenancia C et al. J Cardiovasc Electrophysiol. 2022



STEVENSON ET AL. ENTRAINMENT MAPPING. J Am Coll Cardiol 1997;29:1180–9



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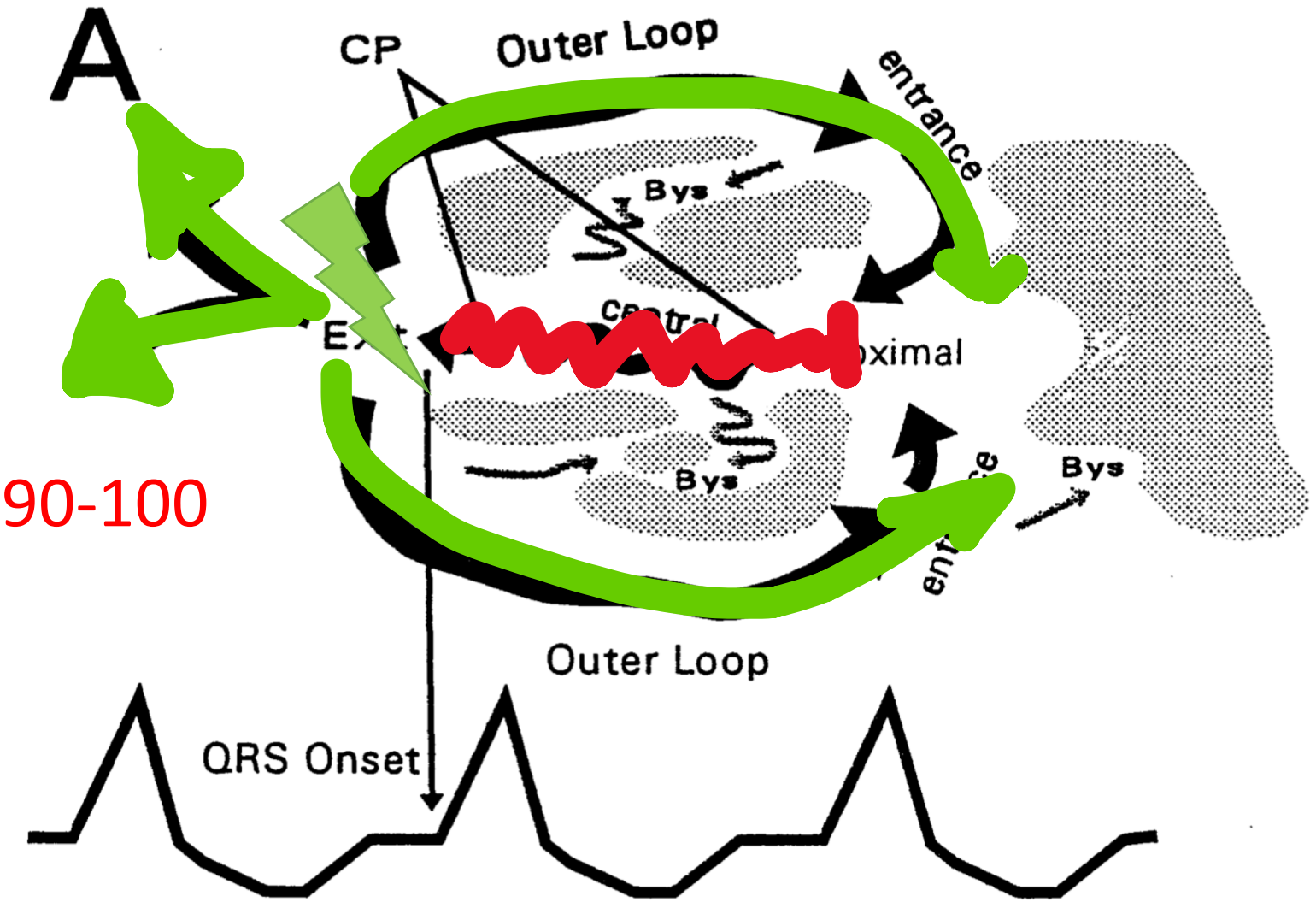

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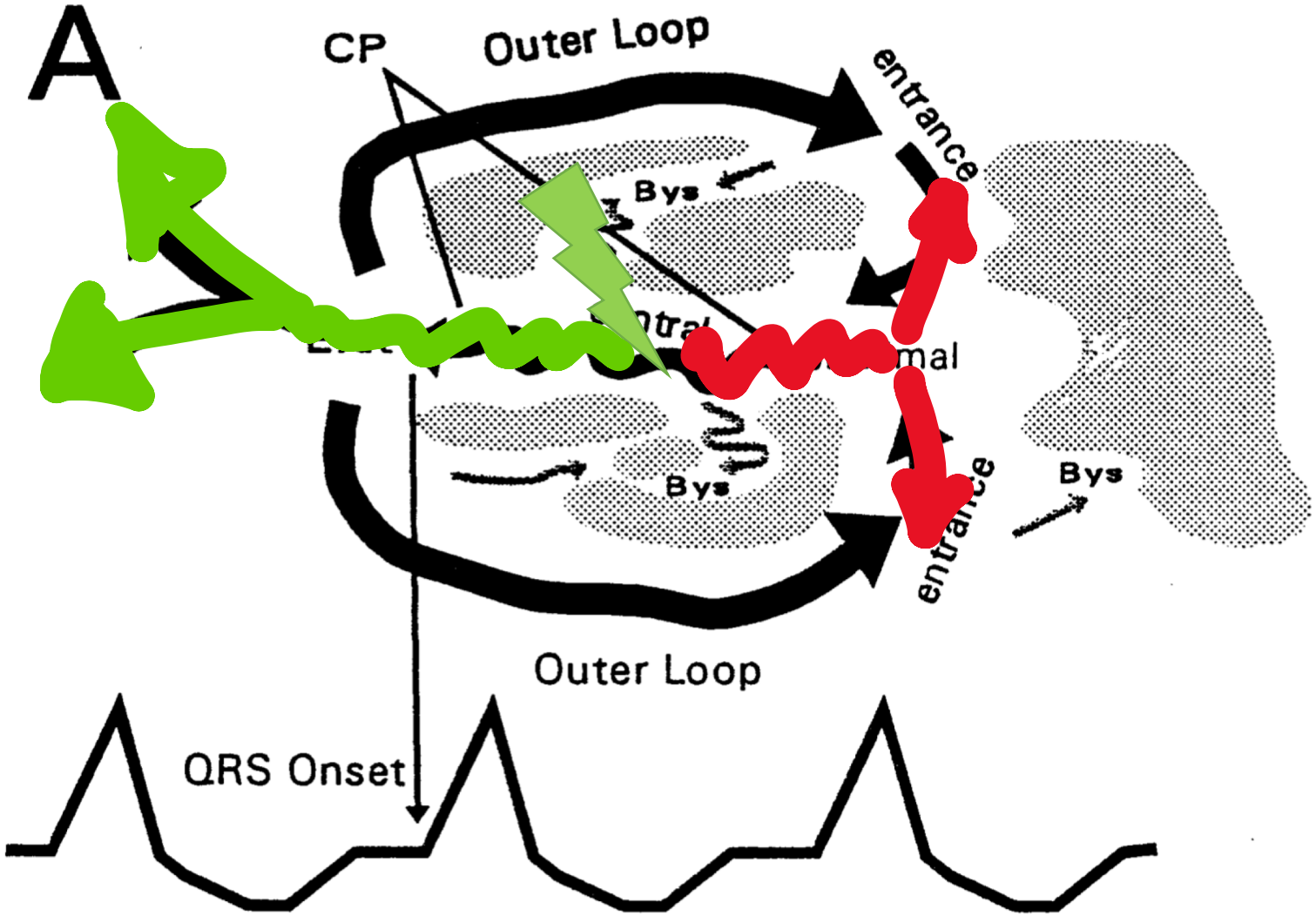
STEVENSON ET AL. ENTRAINMENT MAPPING. J Am Coll Cardiol 1997;29:1180–9



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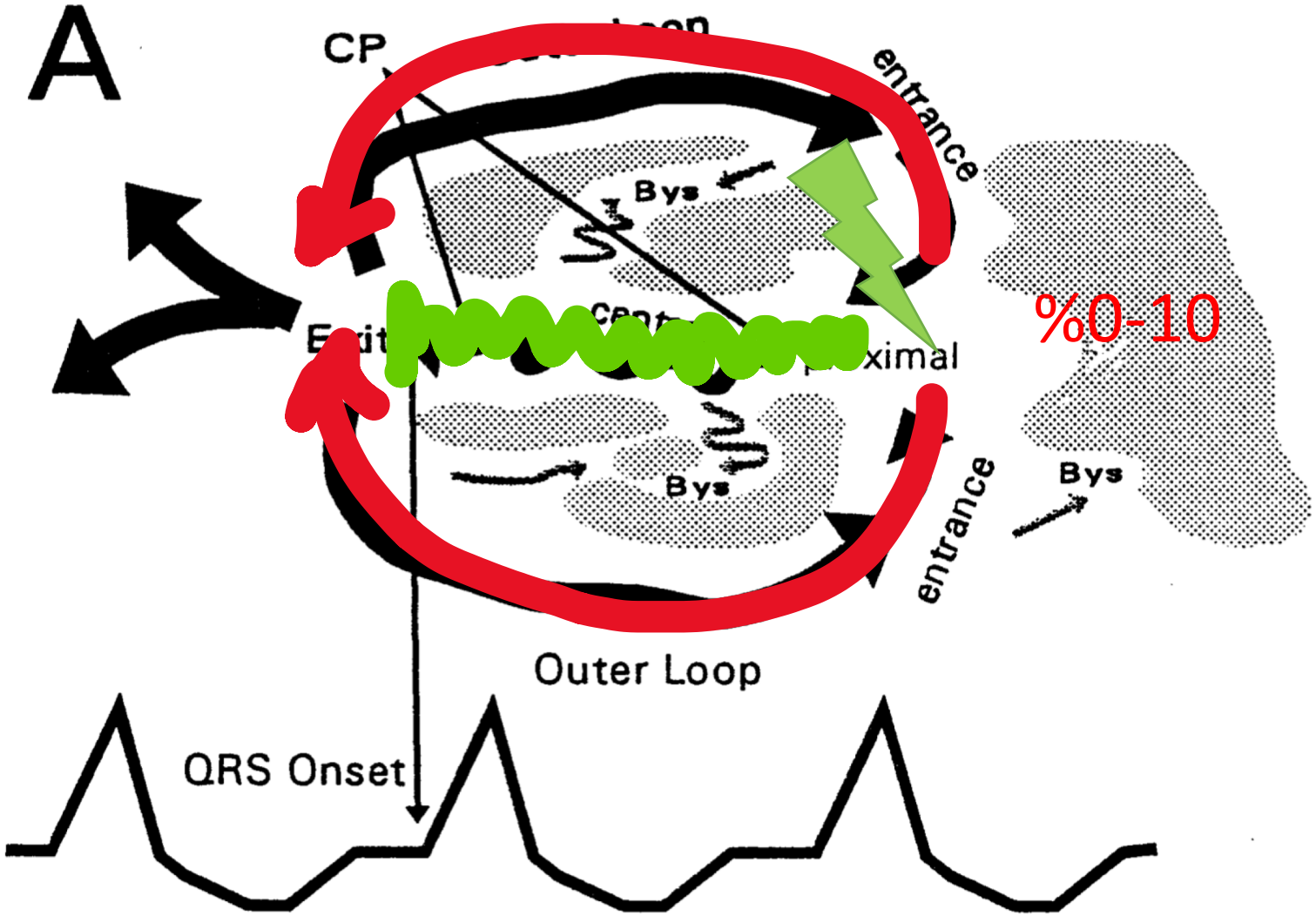

STEVENSON ET AL. ENTRAINMENT MAPPING. J Am Coll Cardiol 1997;29:1180–9

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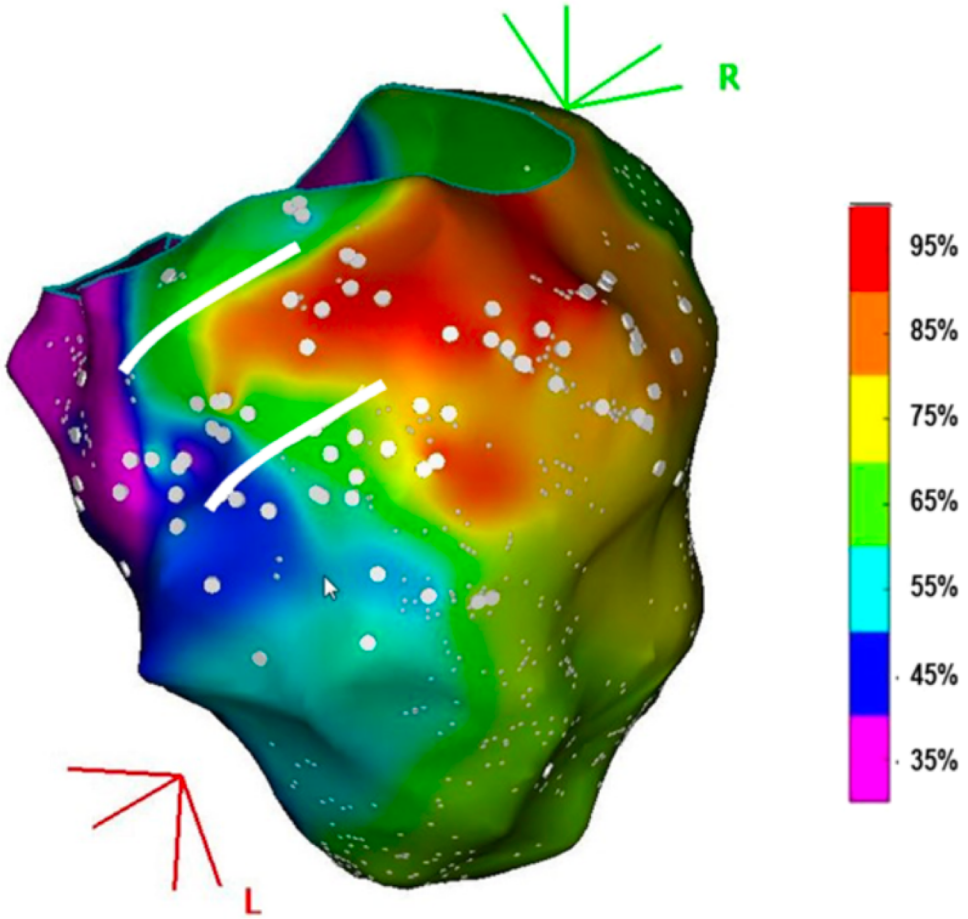

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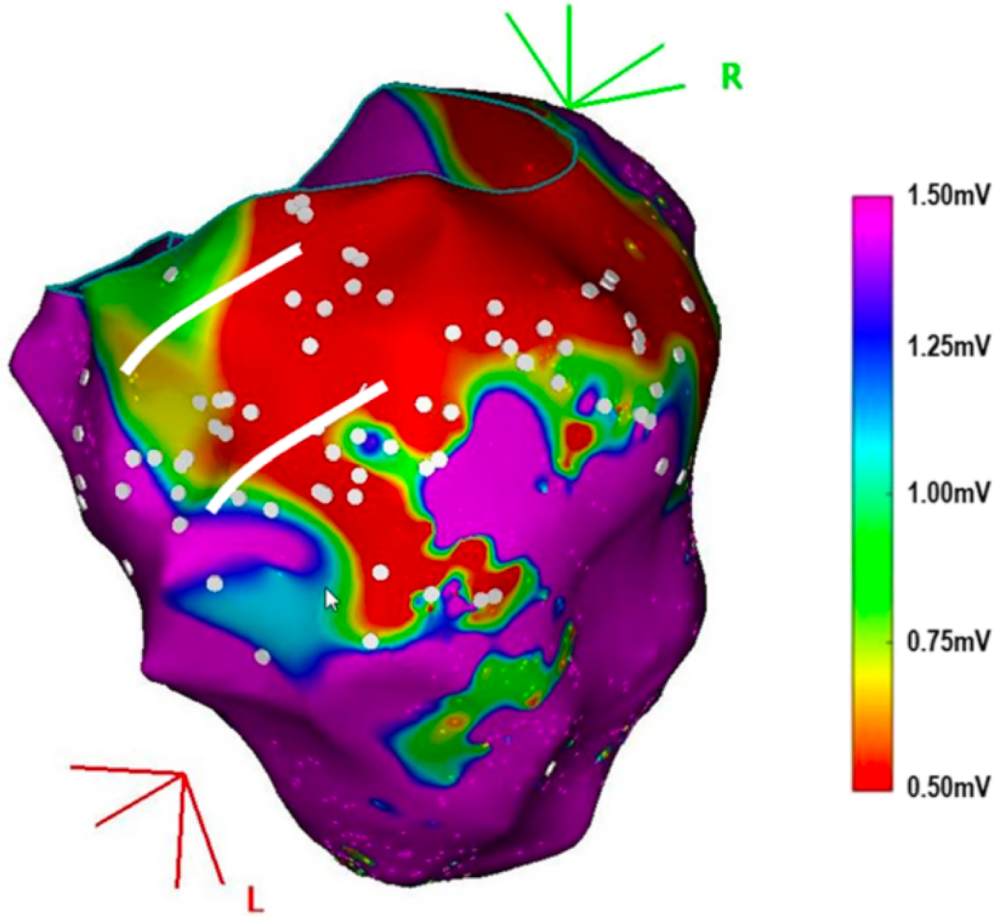
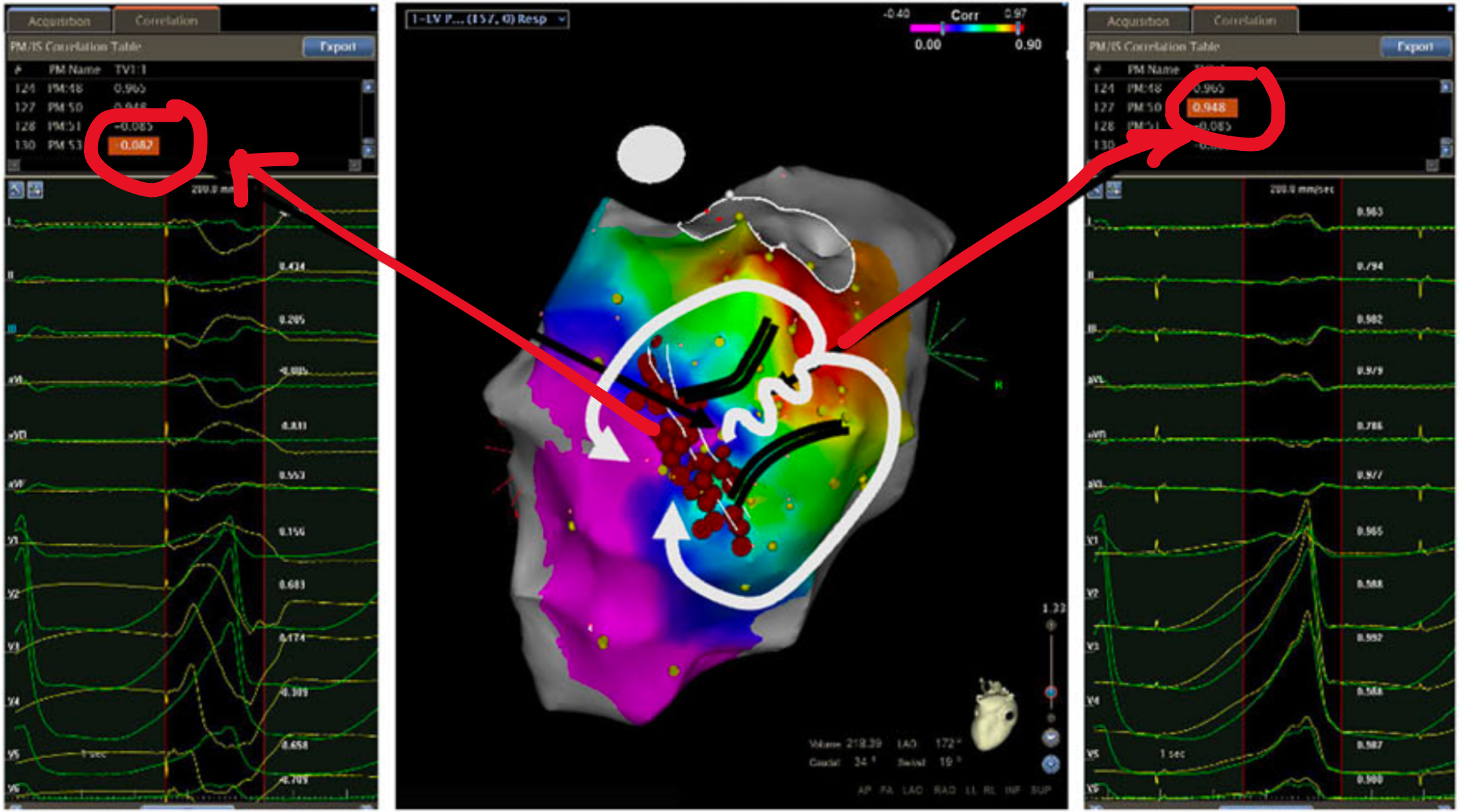


DOKUZEYLÜL ÜNİVERSİTESİ HASTANESİ

Guenancia C et al. J Cardiovasc Electrophysiol. 2022

SR: Pace-Mapping Map



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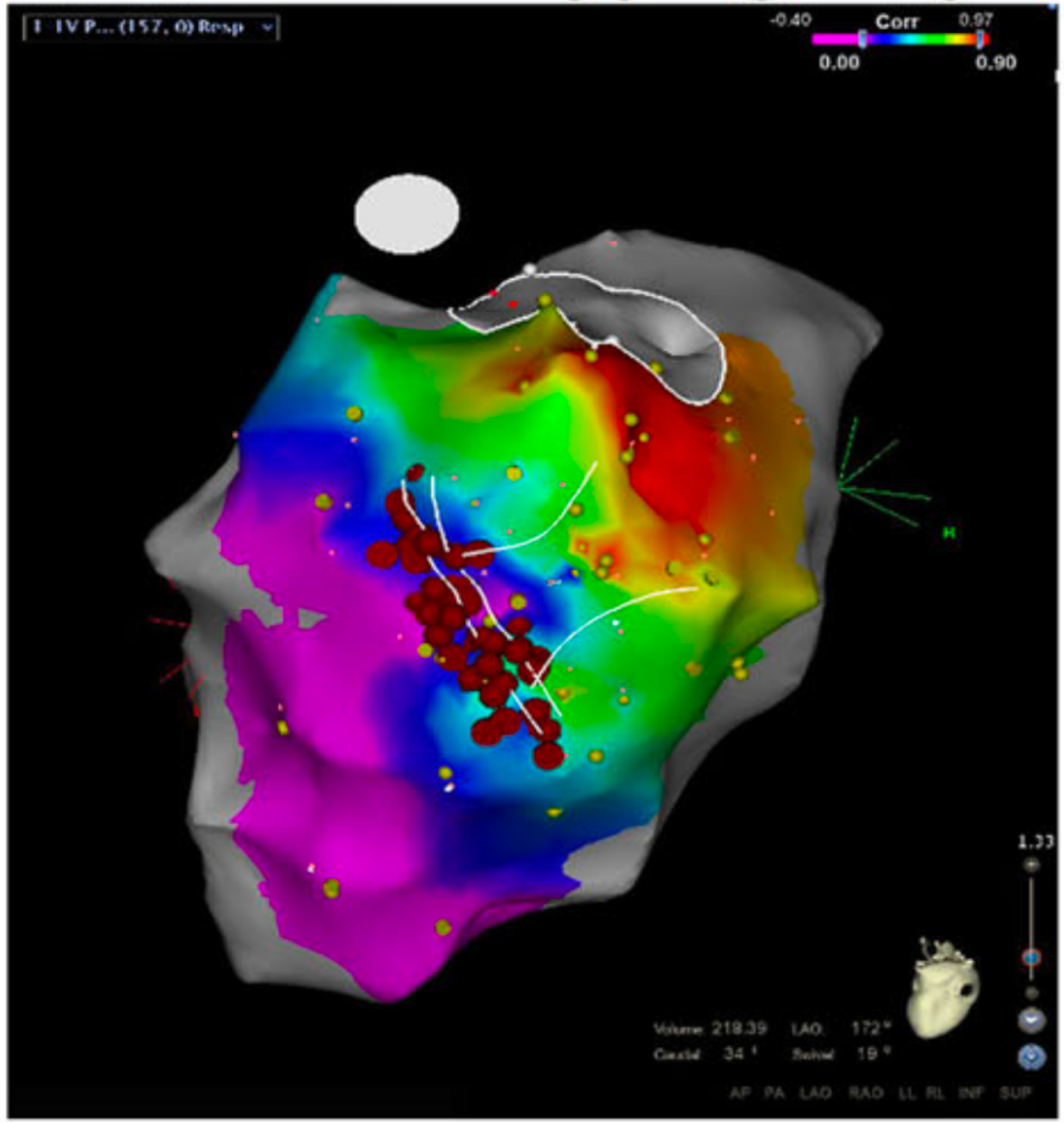
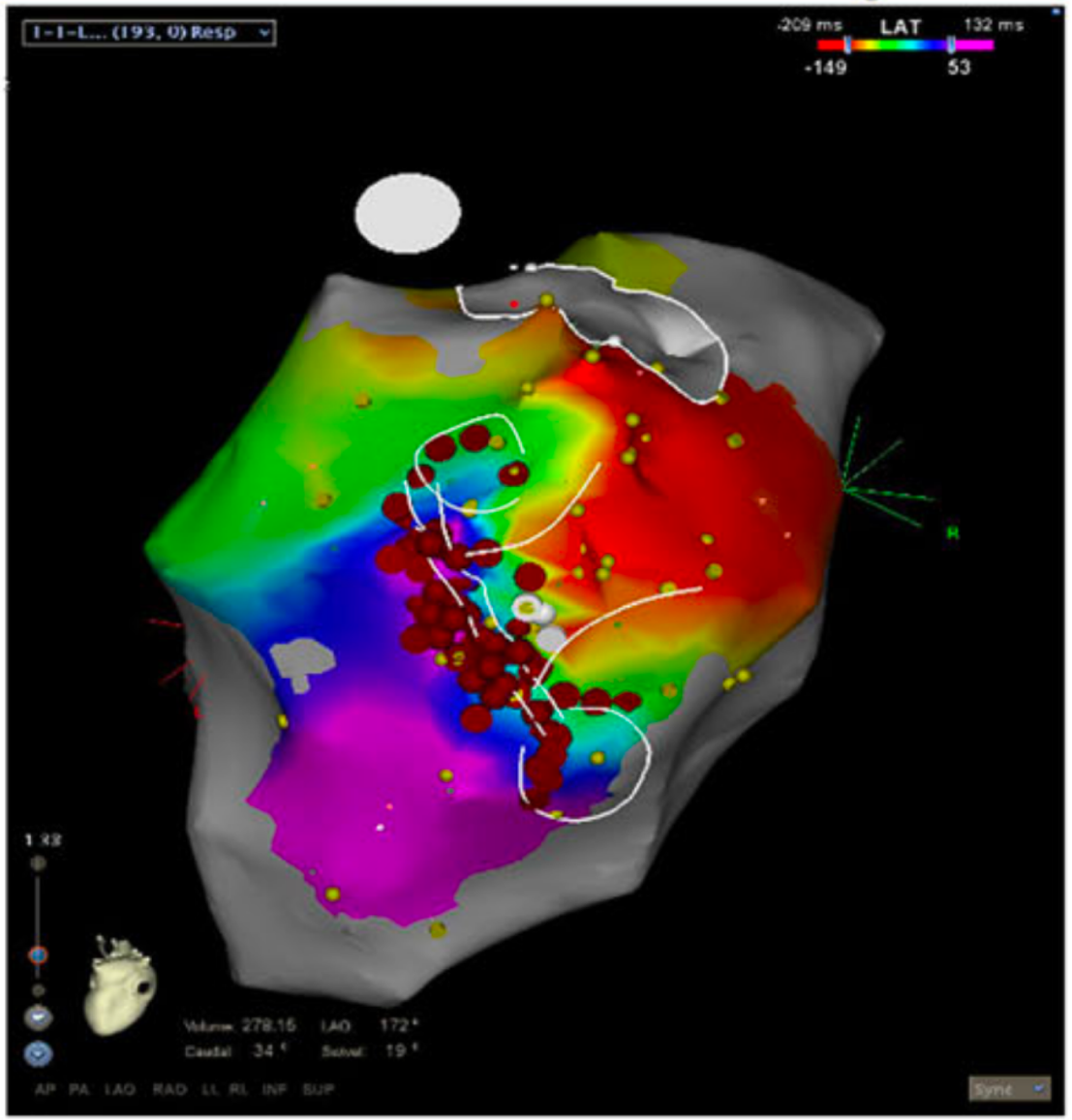
SR: Pace-Mapping Map



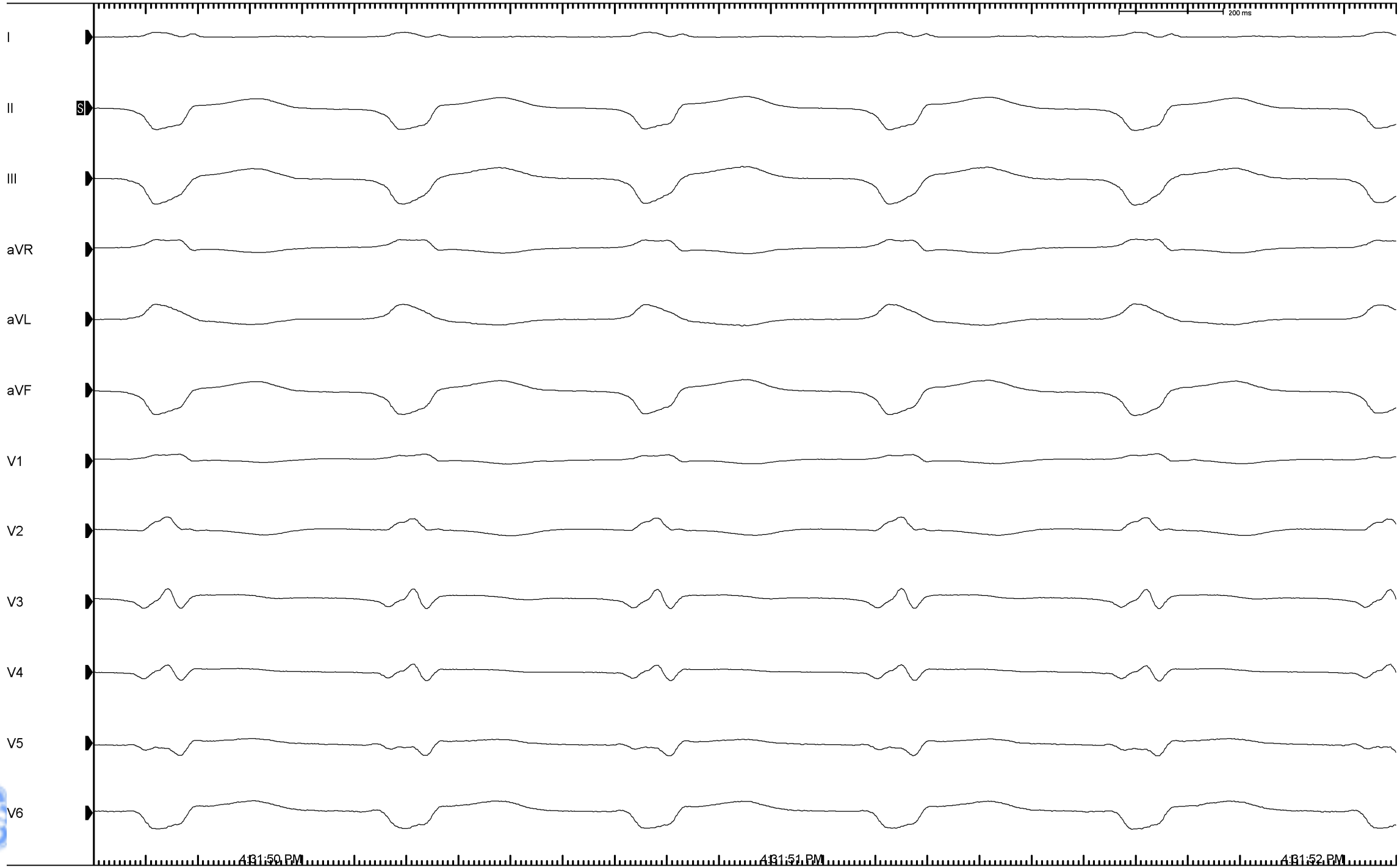
VT: Activation Map

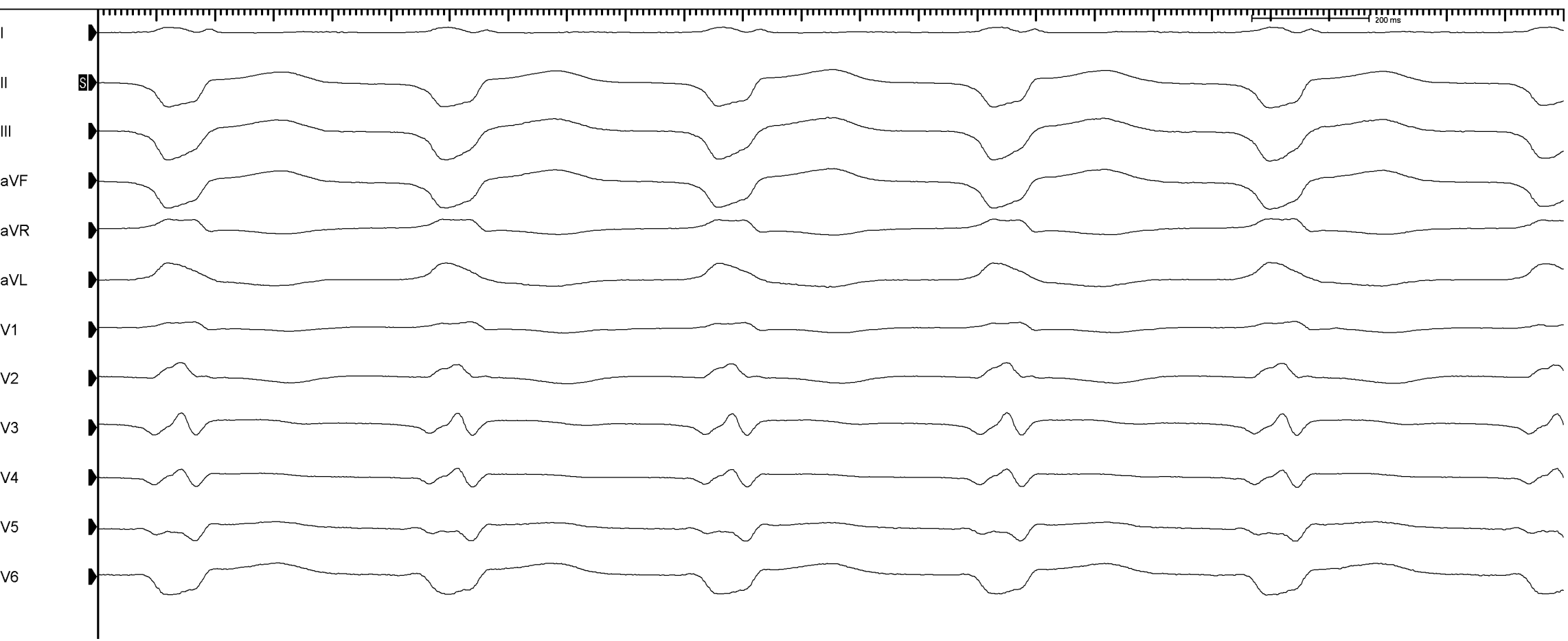


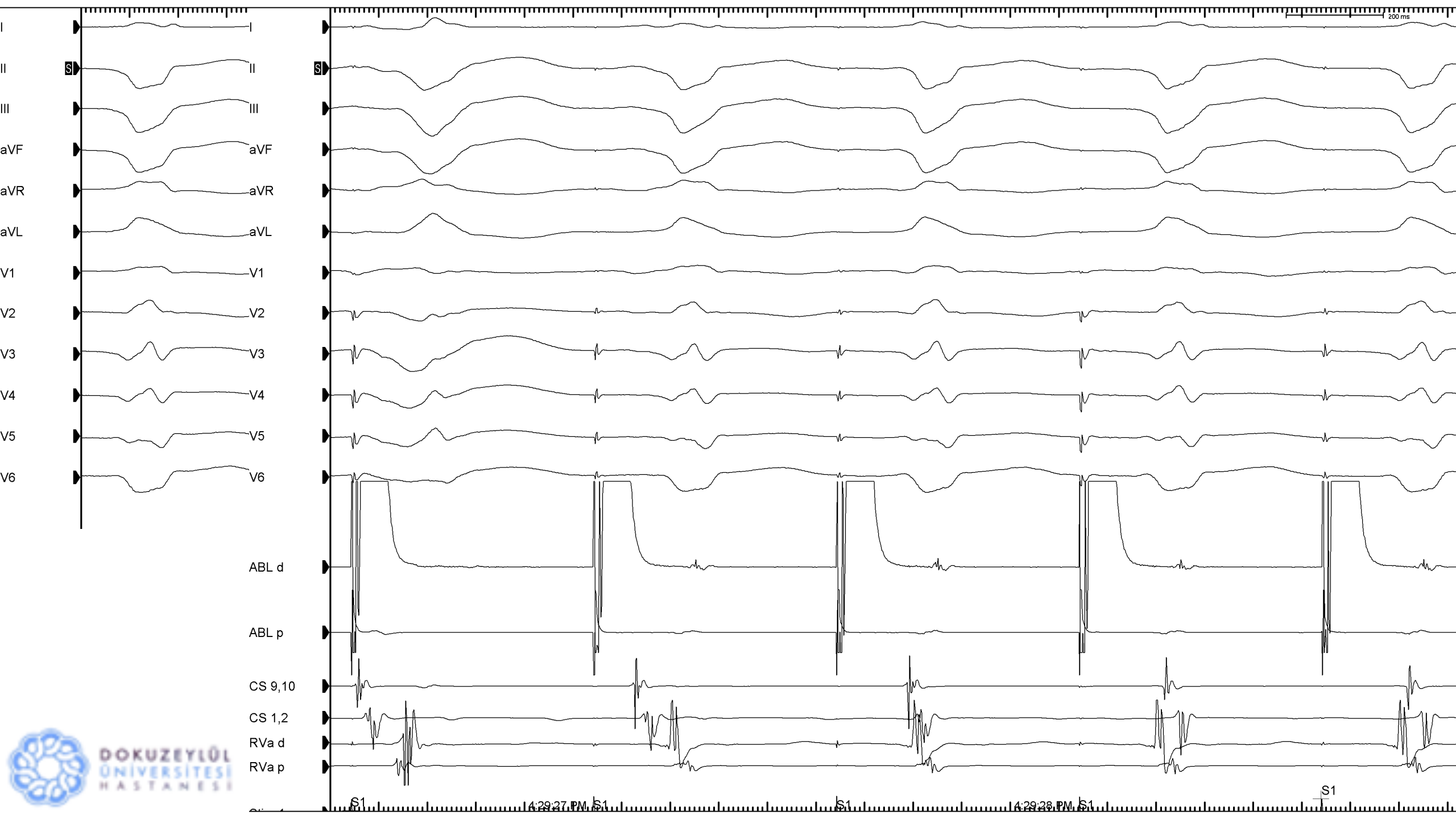
DOKUZEYLÜL ÜNİVERSİTESİ HASTANESİ

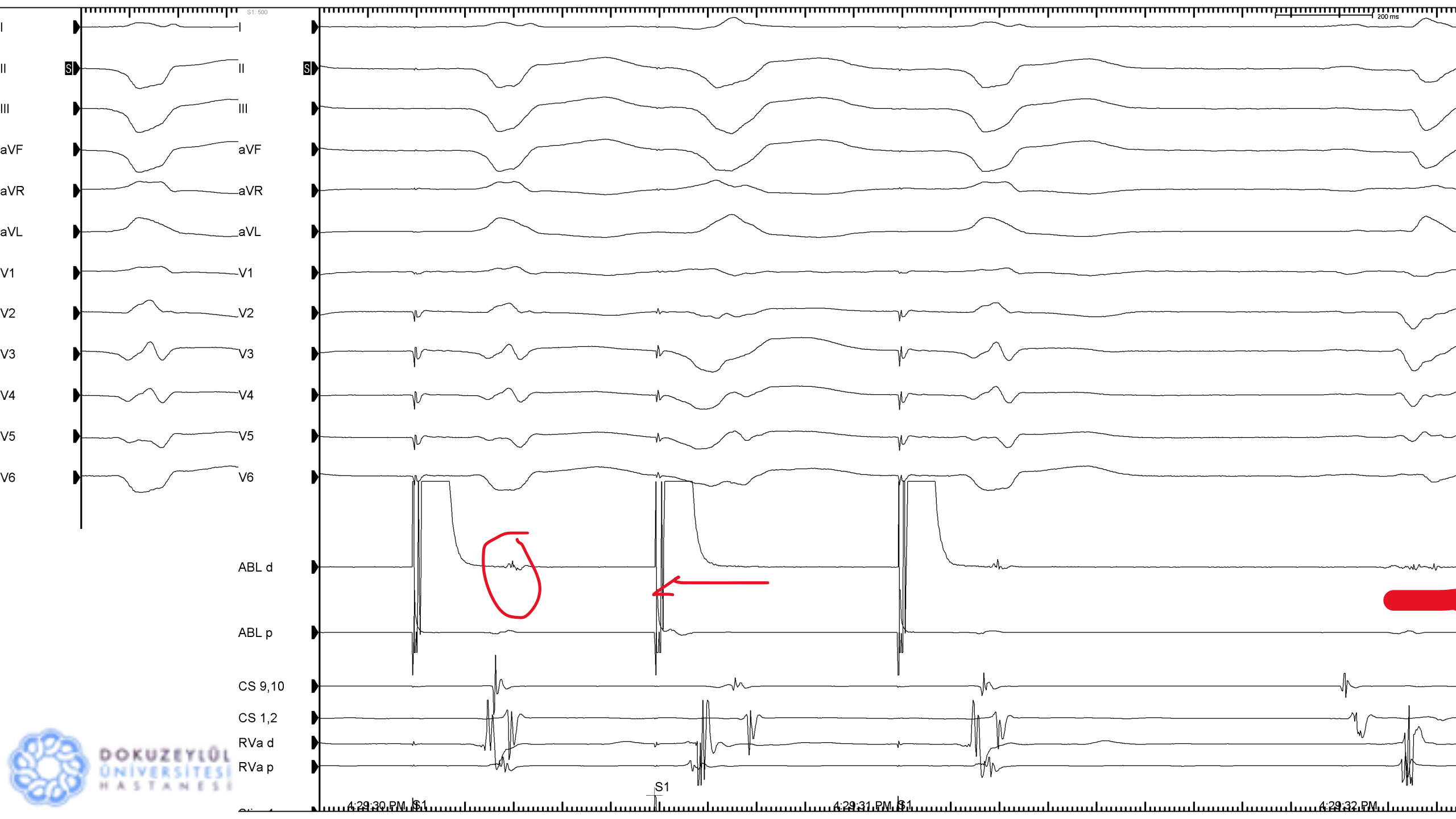
Guenancia C et al. J Cardiovasc Electrophysiol. 2022

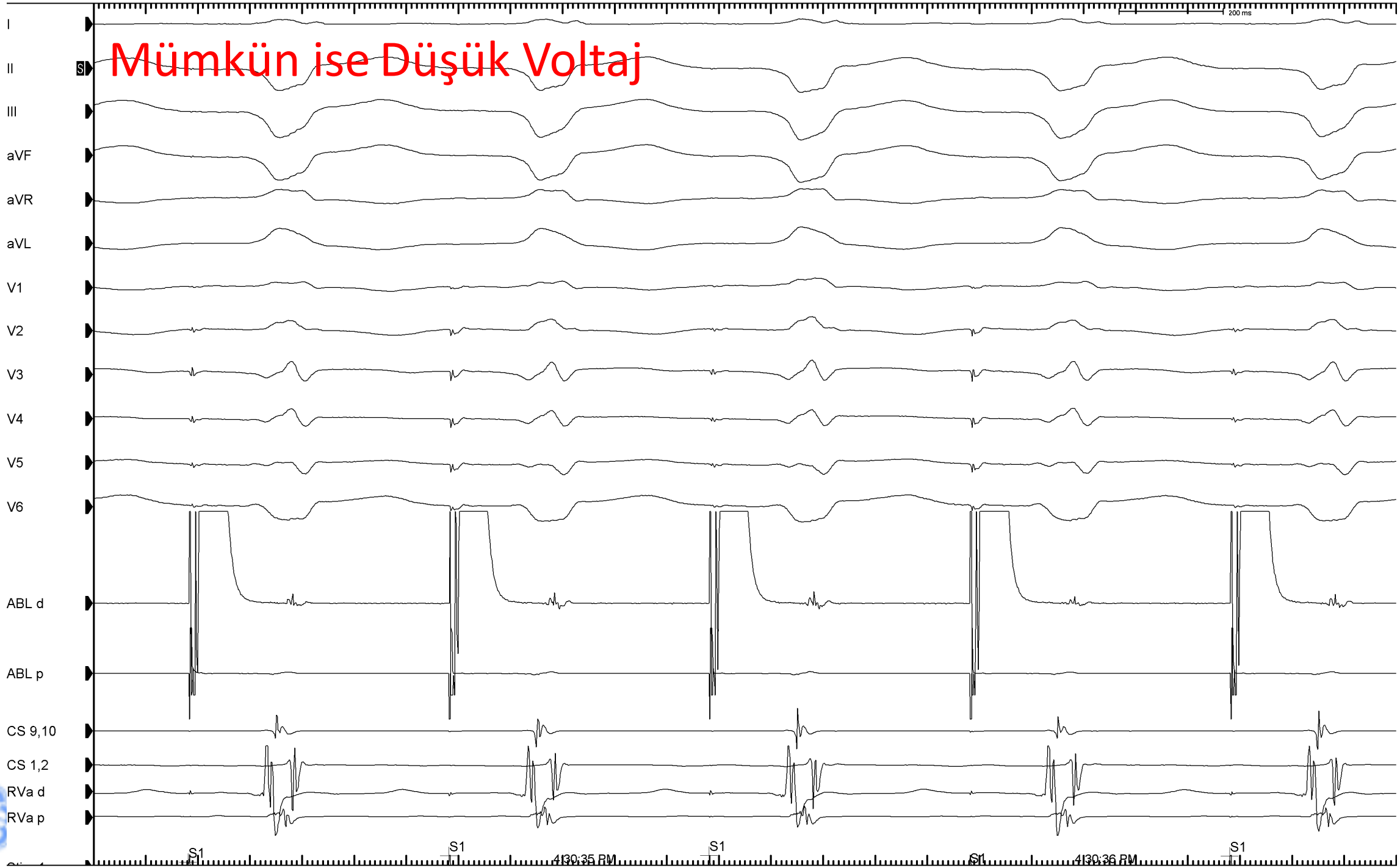
Pace korelasyon haritalama rutinde kullanıyor musunuz?

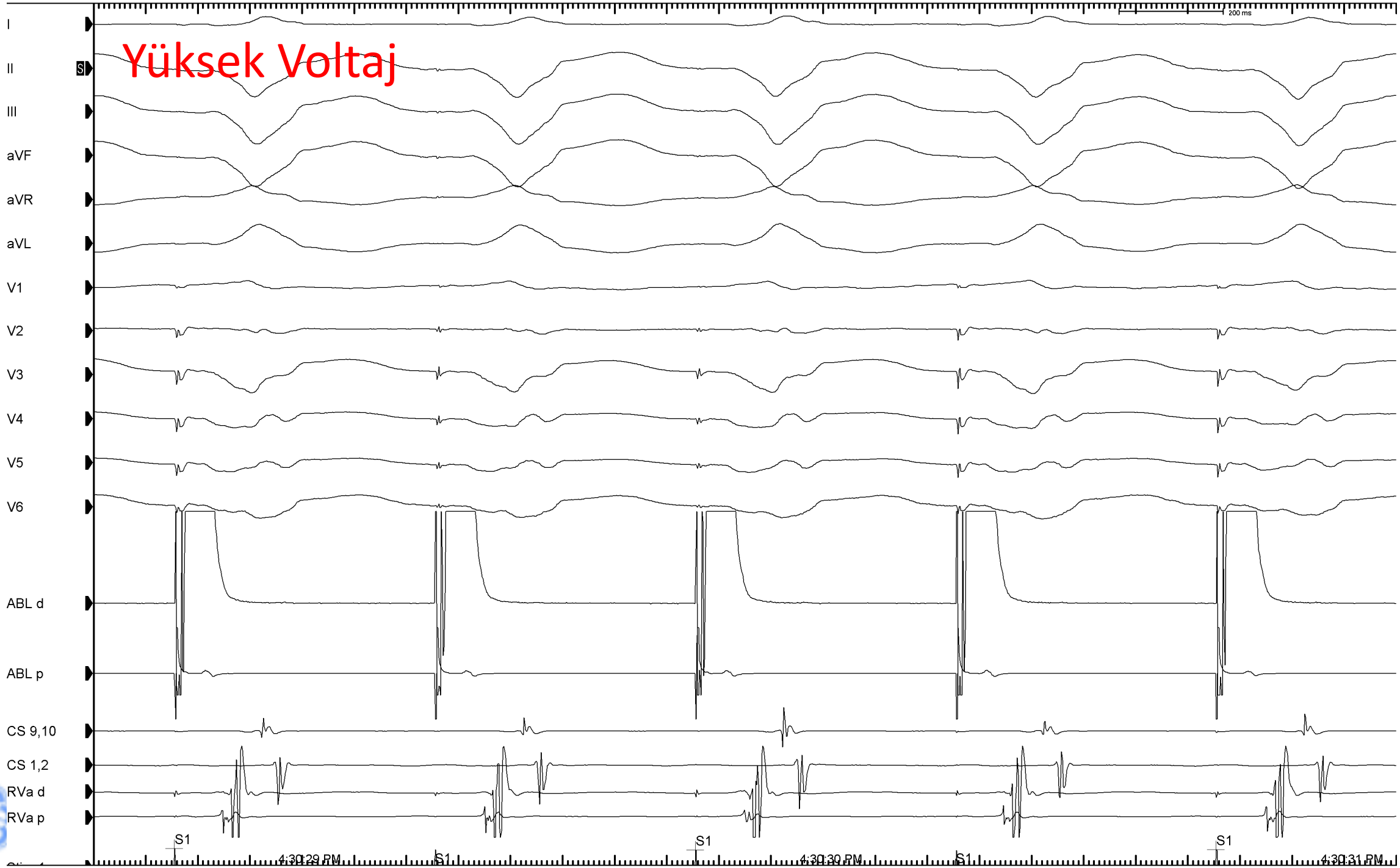

200 ms
I
II
S
III
aVR
aVL
aVF
V1
V2
V3
V4
V5
V6
4:31:50 PM
4:31:51 PM
4:31:52 PM




I
II
III
aVF
aVR
aVL
V1
V2
V3
V4
V5
V6
S
200 ms
ABL d
ABL p
CS 9,10
CS 1,2
RVa d
RVa p
S1
4:29:27 PM
4:29:28 PM
DOKUZEYLÜL ÜNİVERSİTESİ HASTANESİ

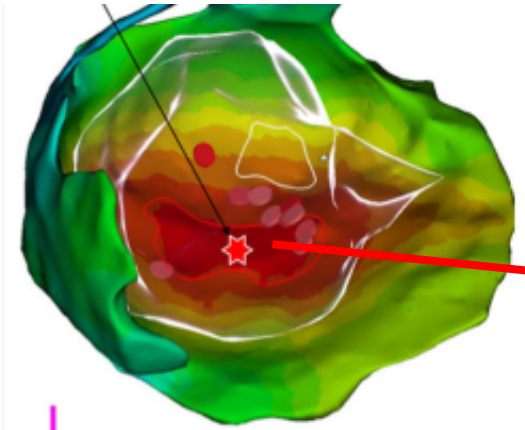

I
II
III
aVF
aVR
aVL
V1
V2
V3
V4
V5
V6
S
200 ms
ABL d
ABL p
CS 9,10
CS 1,2
RVa d
RVa p
S1
4:29:30 PM
4:29:31 PM
4:29:32 PM


Mümkün ise Düşük Voltaj
200 ms
I
II
III
aVF
aVR
aVL
V1
V2
V3
V4
V5
V6
ABL d
ABL p
CS 9,10
CS 1,2
RVa d
RVa p
S1
S1
4:30:35 PM
S1
S1
4:30:36 PM
S1

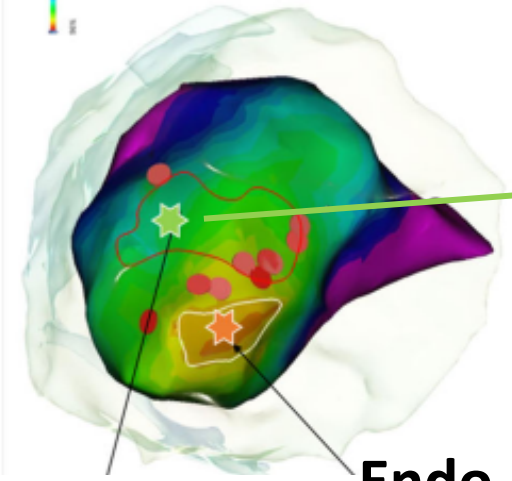

Yüksek Voltaj
I
II
III
aVF
aVR
aVL
V1
V2
V3
V4
V5
V6
ABL d
ABL p
CS 9,10
CS 1,2
RVa d
RVa p
200 ms
S1
S1
S1
S1
4:30:29 PM
4:30:30 PM
4:30:31 PM

Skar 3 boyutlu bir yapı

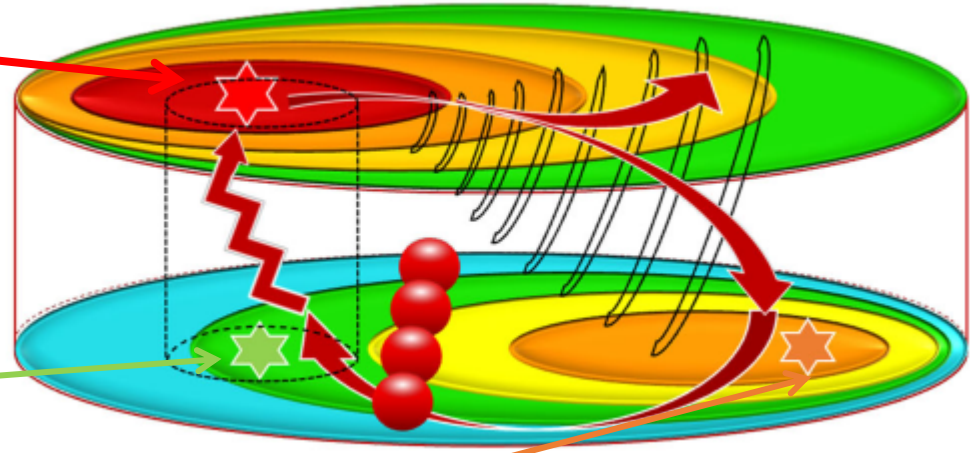
Epi PM
96%



Endo
57%

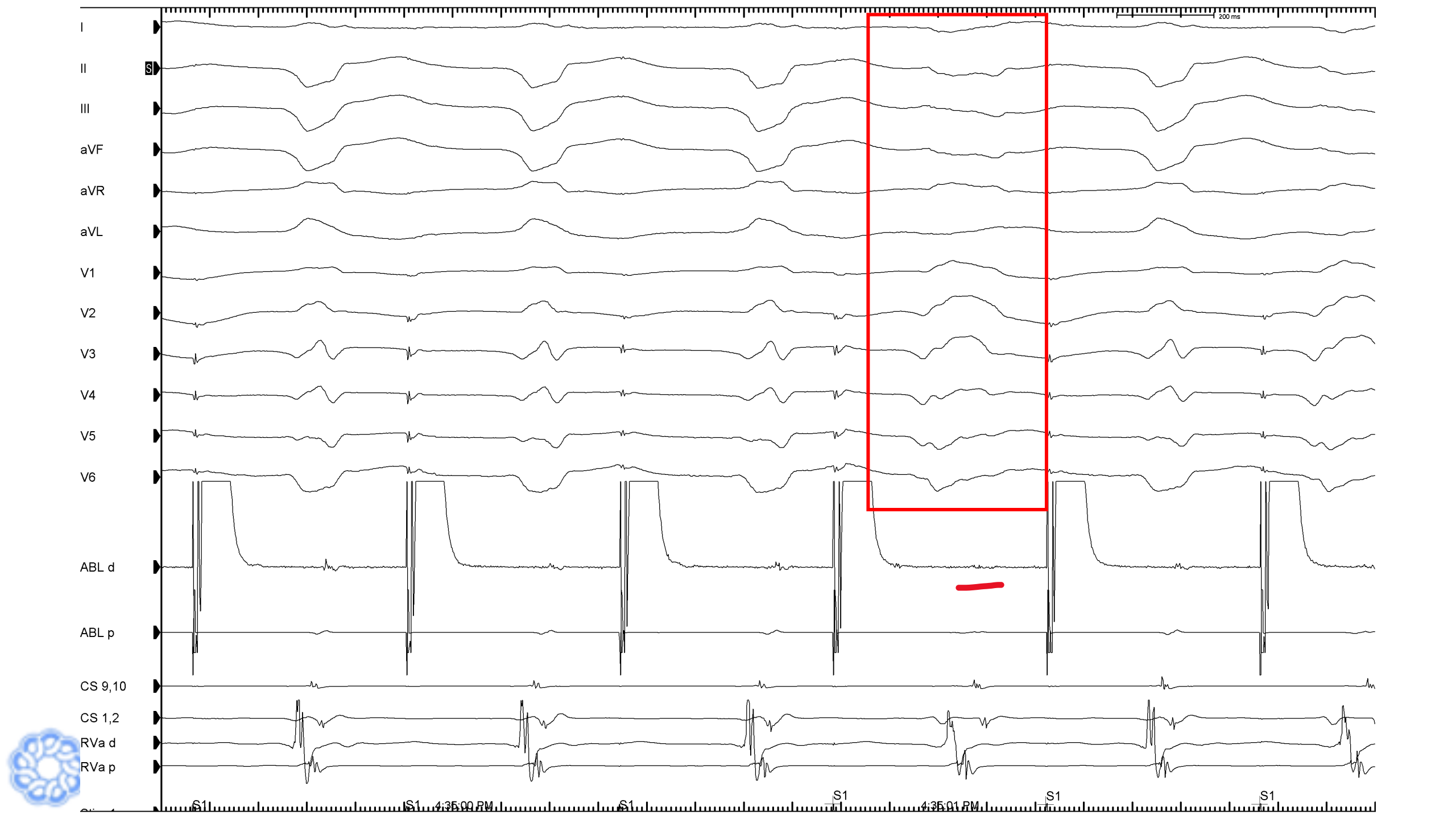


Endo
87%

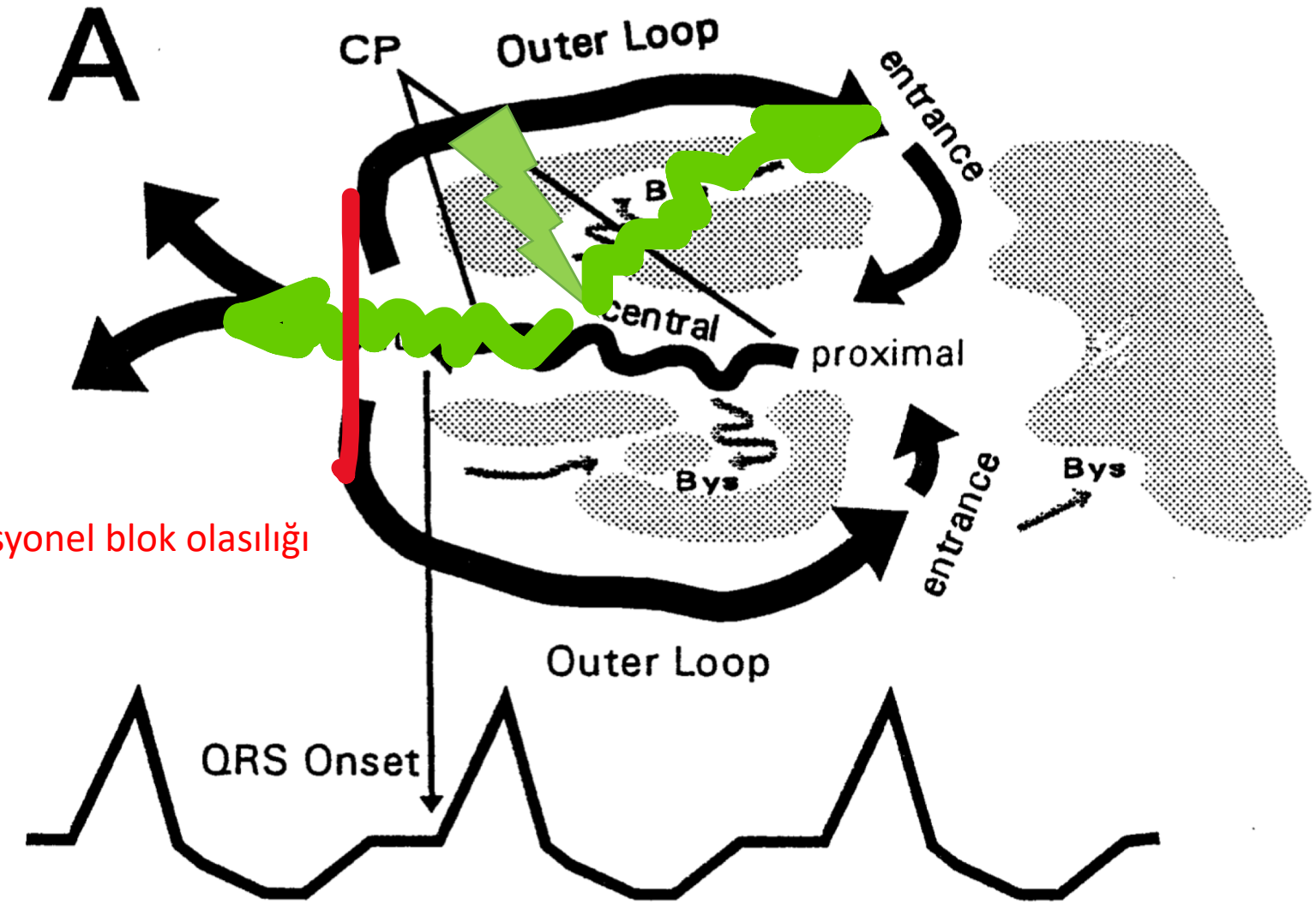


LV endokardiyal bölgede epikardiyal
PM ‘en iyi’ projekte eden alanı görebilirsiniz

DOKUZEYLÜL ÜNİVERSİTESİ HASTANESİ


I
II
III
aVF
aVR
aVL
V1
V2
V3
V4
V5
V6
ABL d
ABL p
CS 9,10
CS 1,2
RVa d
RVa p
200 ms
S1
S1
4:35:00 PM
S1
S1
4:35:01 PM
S1
S1

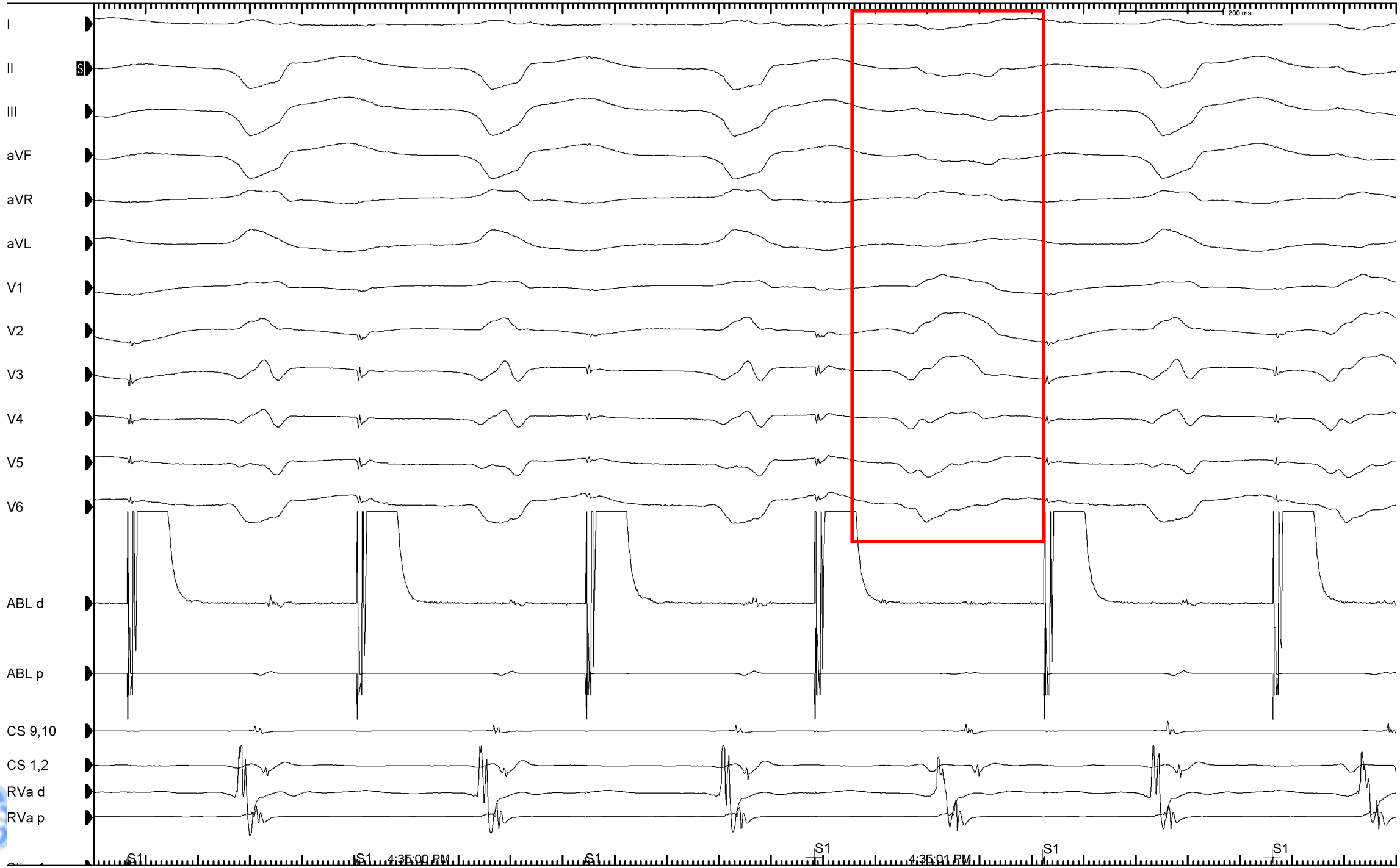
MES

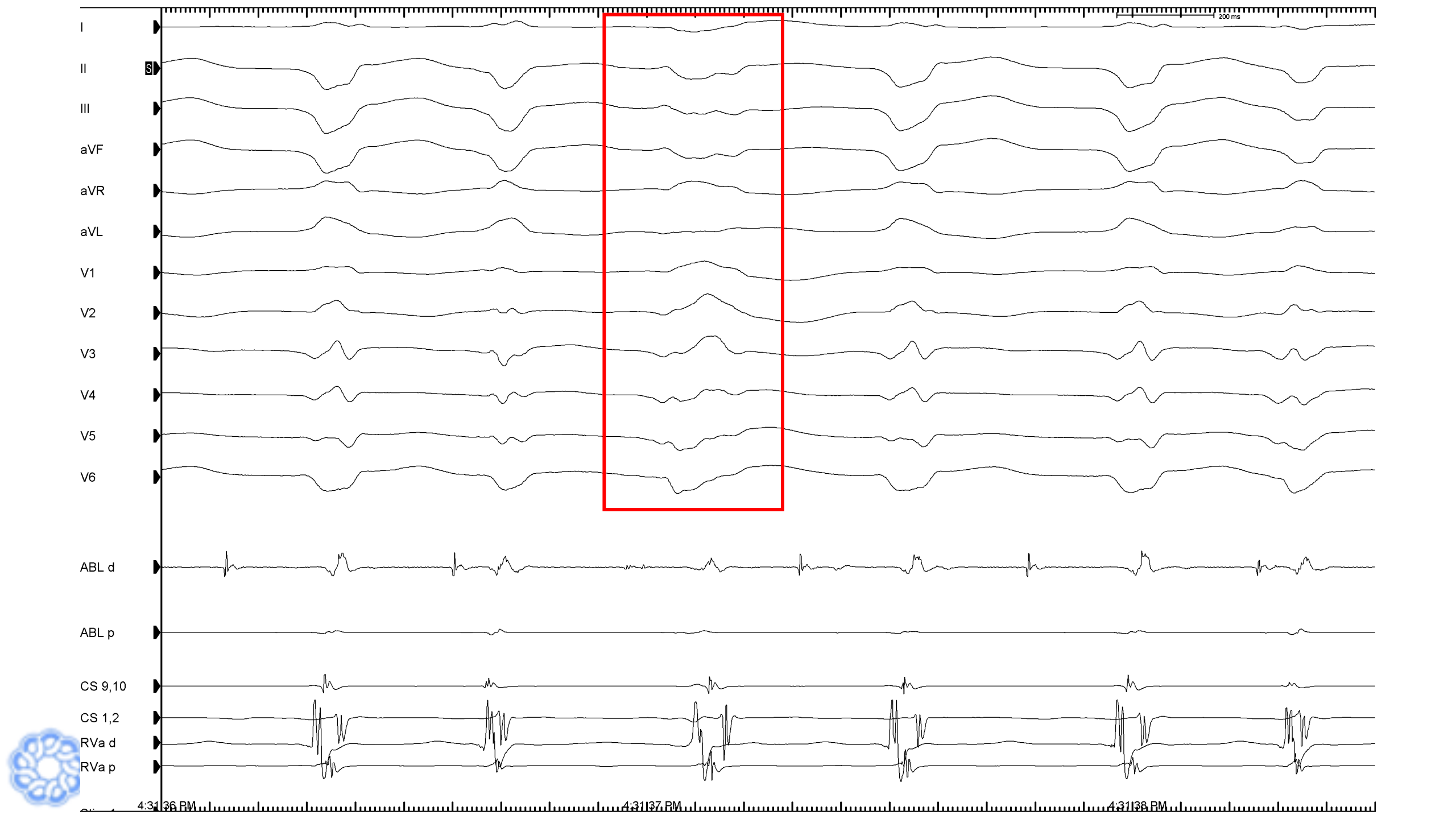


Fonkisyonel blok olasılığı

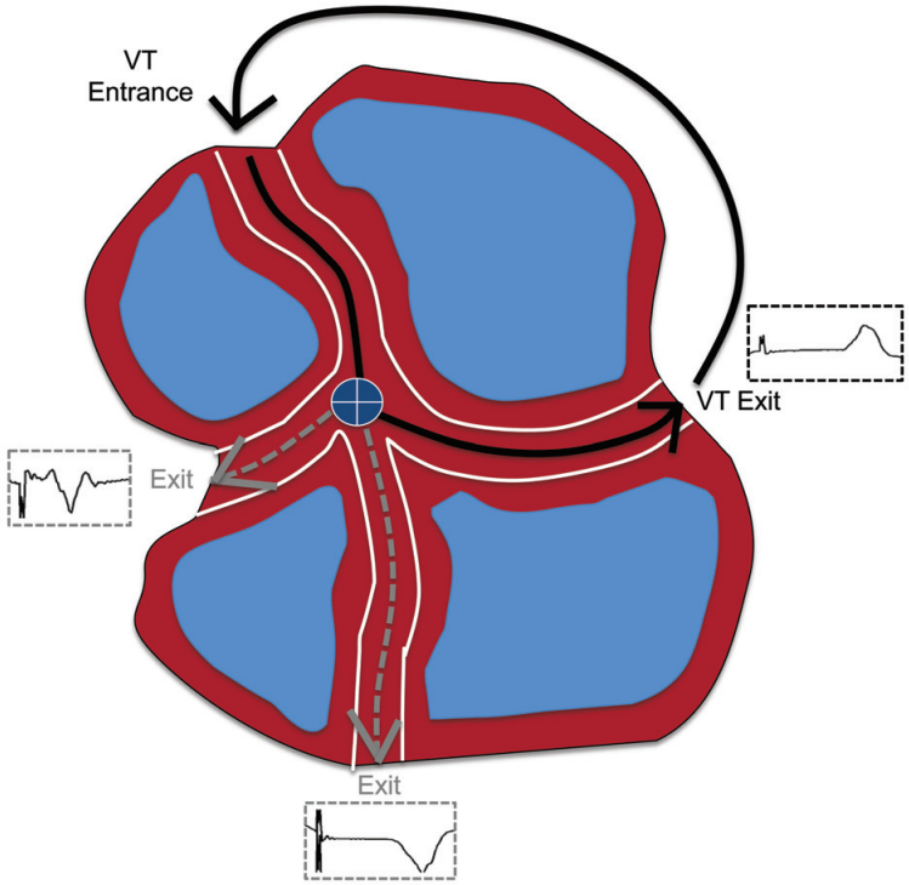
Nasıl ayırt edebiliriz?

STEVENSON ET AL. ENTRAINMENT MAPPING. J Am Coll Cardiol 1997;29:1180–9


I
II
III
aVF
aVR
aVL
V1
V2
V3
V4
V5
V6
ABL d
ABL p
CS 9,10
CS 1,2
RVa d
RVa p
200 ms
S1
S1
4:35:00 PM
S1
S1
4:35:01 PM
S1
S1


I
II
III
aVF
aVR
aVL
V1
V2
V3
V4
V5
V6
ABL d
ABL p
CS 9,10
CS 1,2
RVa d
RVa p
200 ms
4:31:36 PM
4:31:37 PM
4:31:38 PM

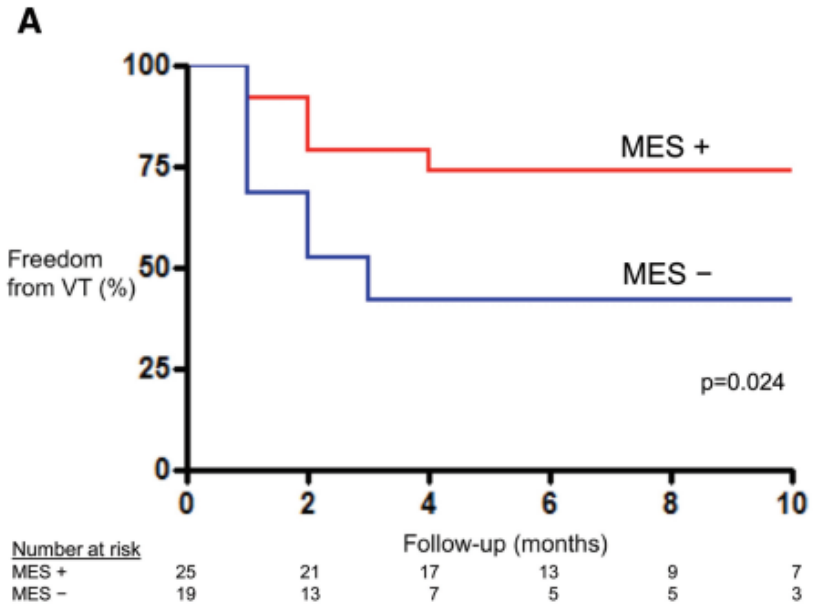
Pacing Map- Multiple Exit site

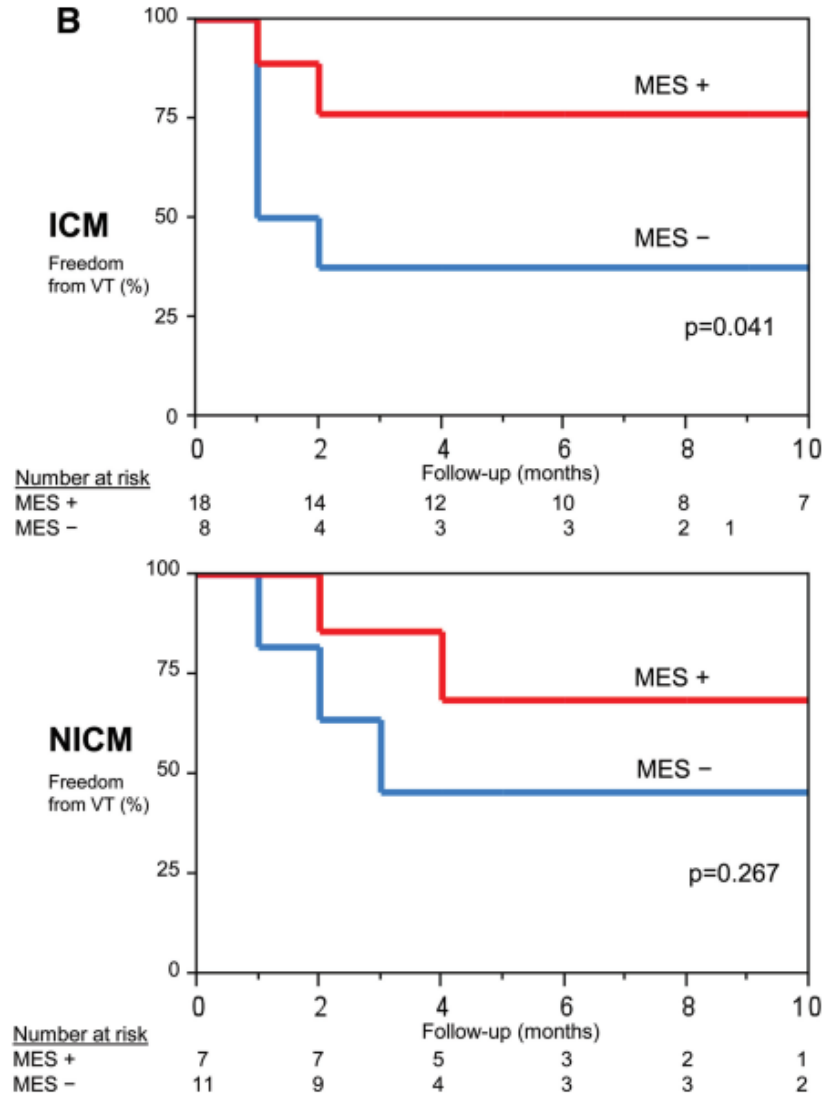


- %57 Multiple exit site görülmektedir
- Pace-map ile VT indüksiyonu- reentry için kritik bölgeyi gösterebilir
- Bu bölge kateter ablasyonu için potansiyel alandır

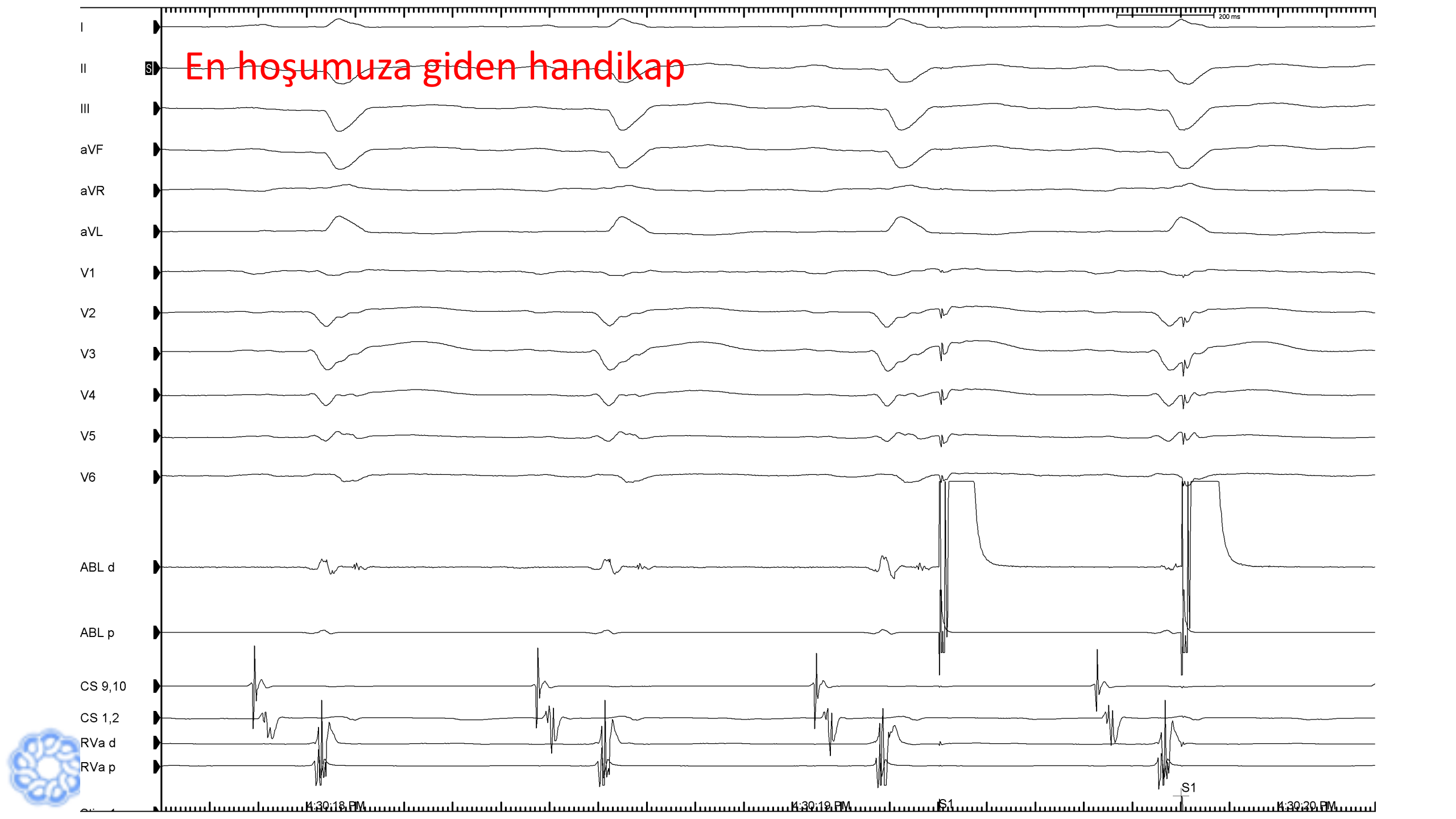
DOKUZEYLÜL ÜNİVERSİTESİ HASTANESİ

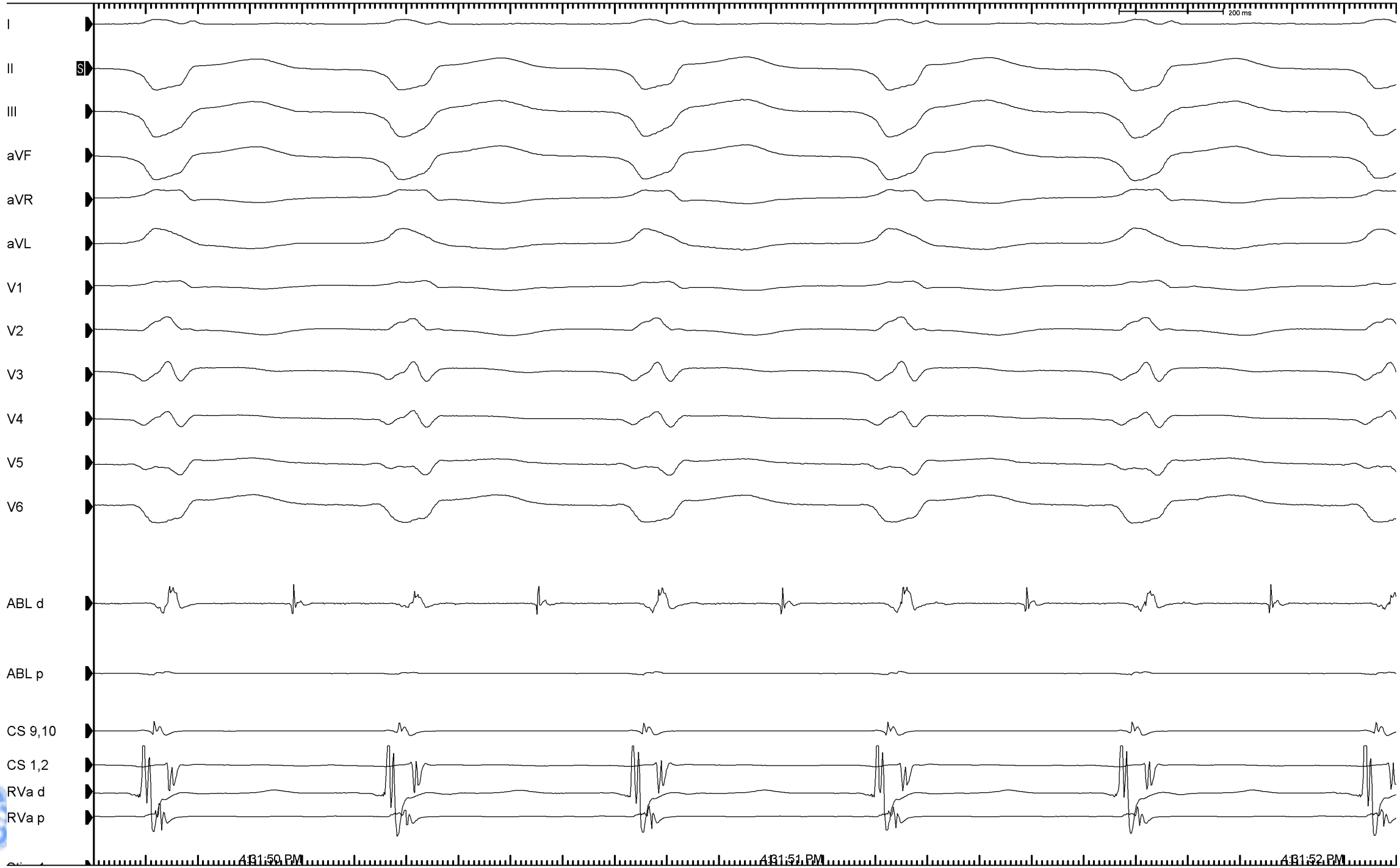
Tung et al. Circ Arrhythm Electrophysiol. 2012

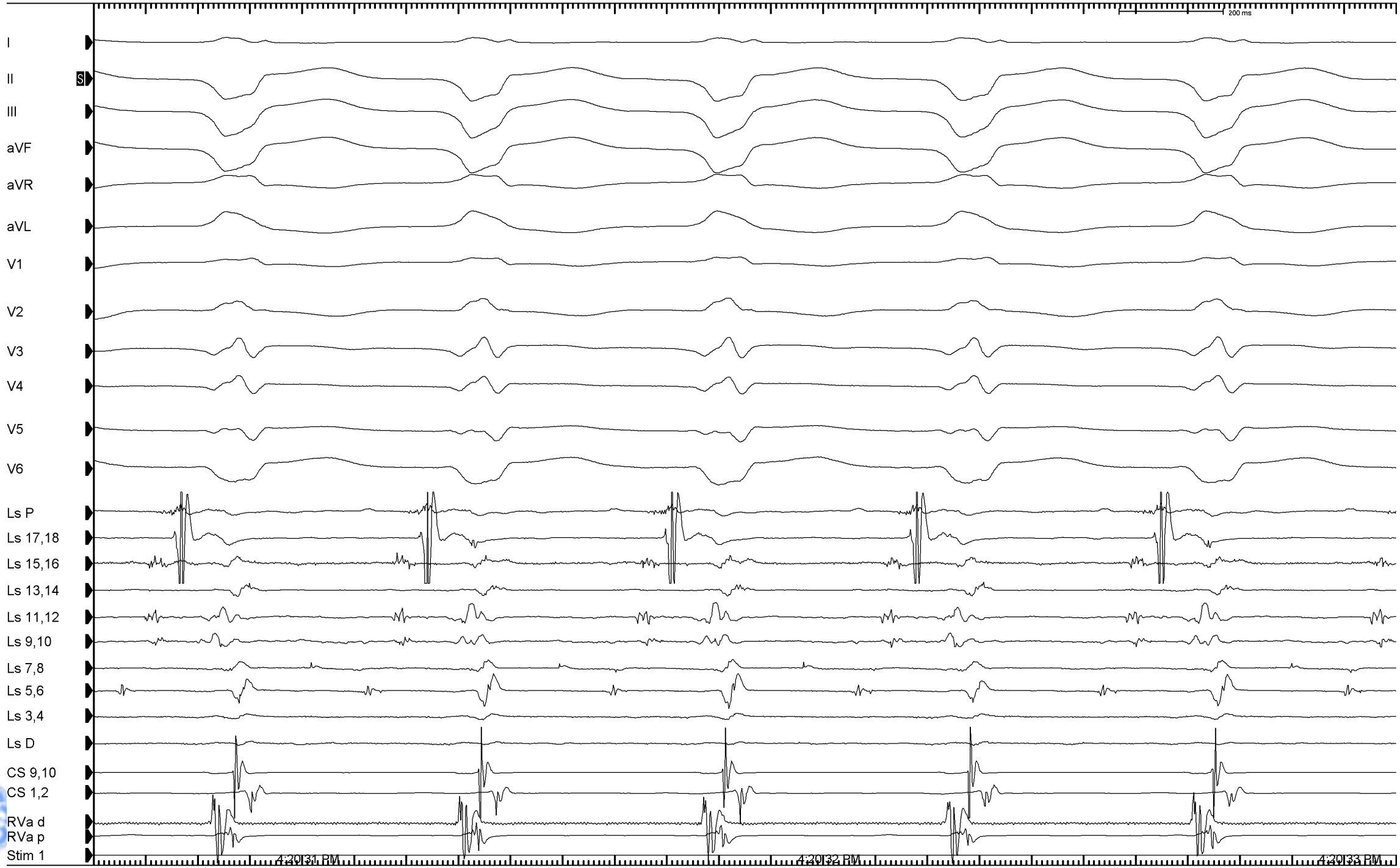




Tung et al. Circ Arrhythm Electrophysiol. 2012

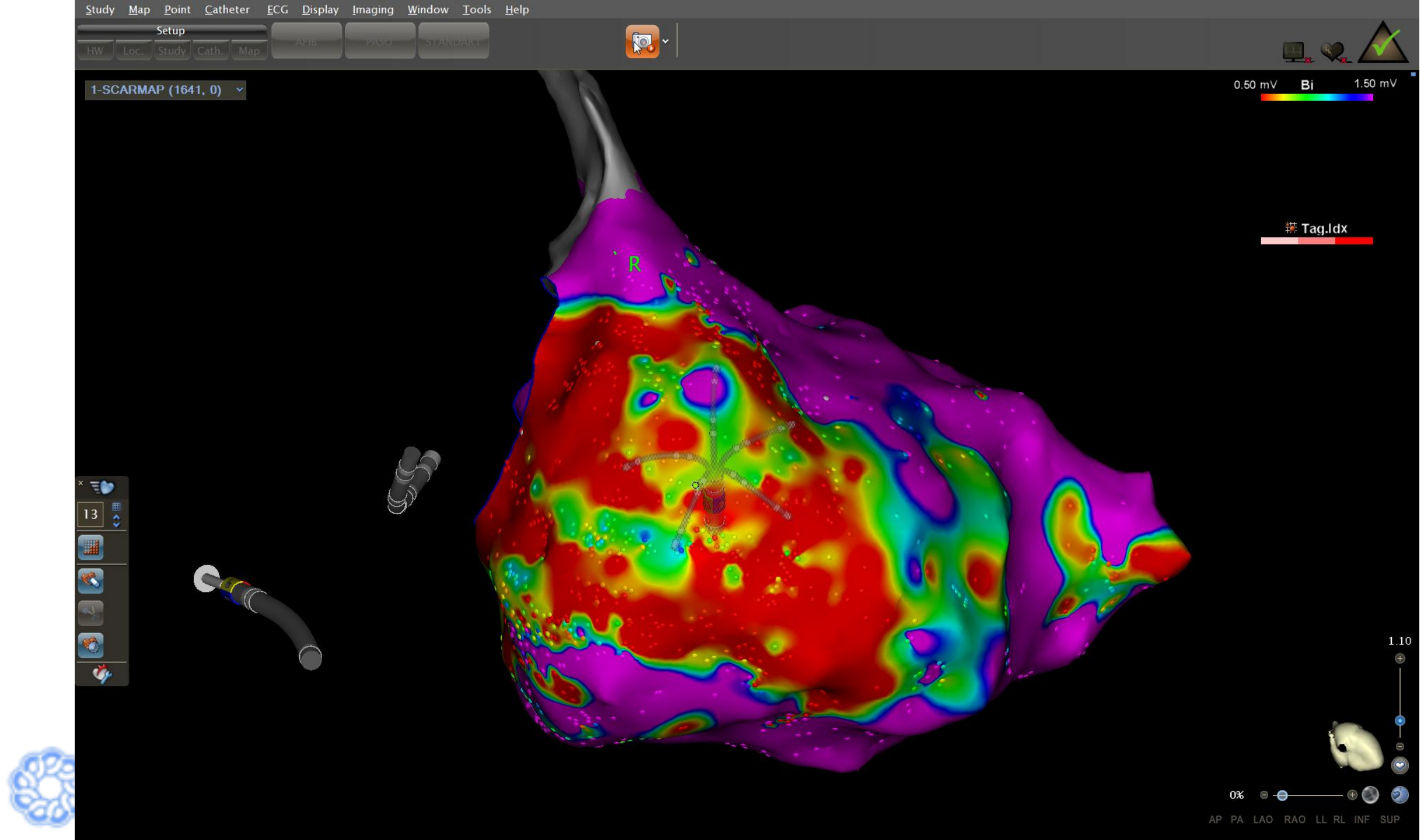

En hoşumuza giden handikap
I
II
III
aVF
aVR
aVL
V1
V2
V3
V4
V5
V6
ABL d
ABL p
CS 9,10
CS 1,2
RVa d
RVa p
200 ms
S1
4:30:18 PM
4:30:19 PM
4:30:20 PM

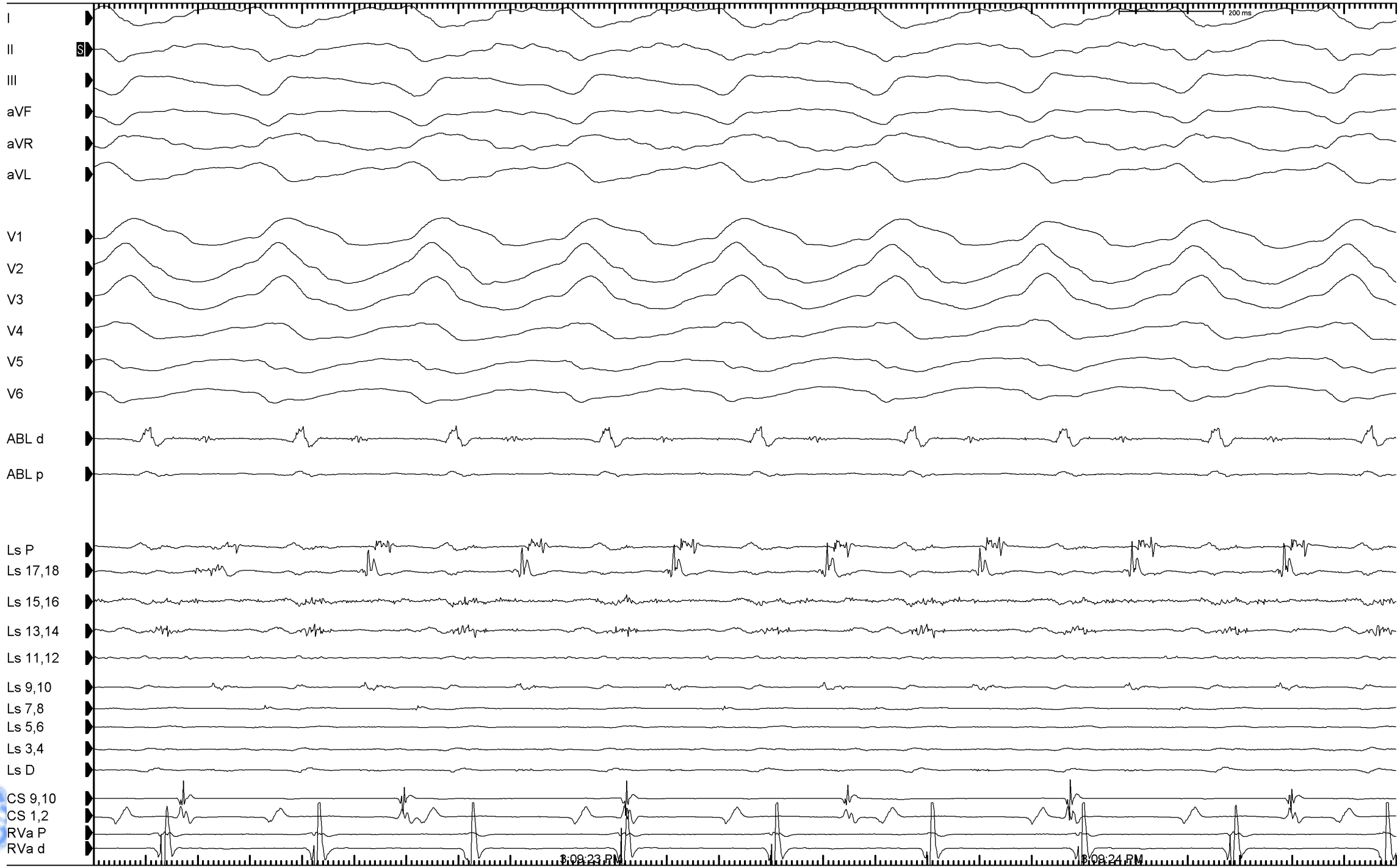

200 ms
I
II
S
III
aVF
aVR
aVL
V1
V2
V3
V4
V5
V6
ABL d
ABL p
CS 9,10
CS 1,2
RVa d
RVa p
4:31:50 PM
4:31:51 PM
4:31:52 PM

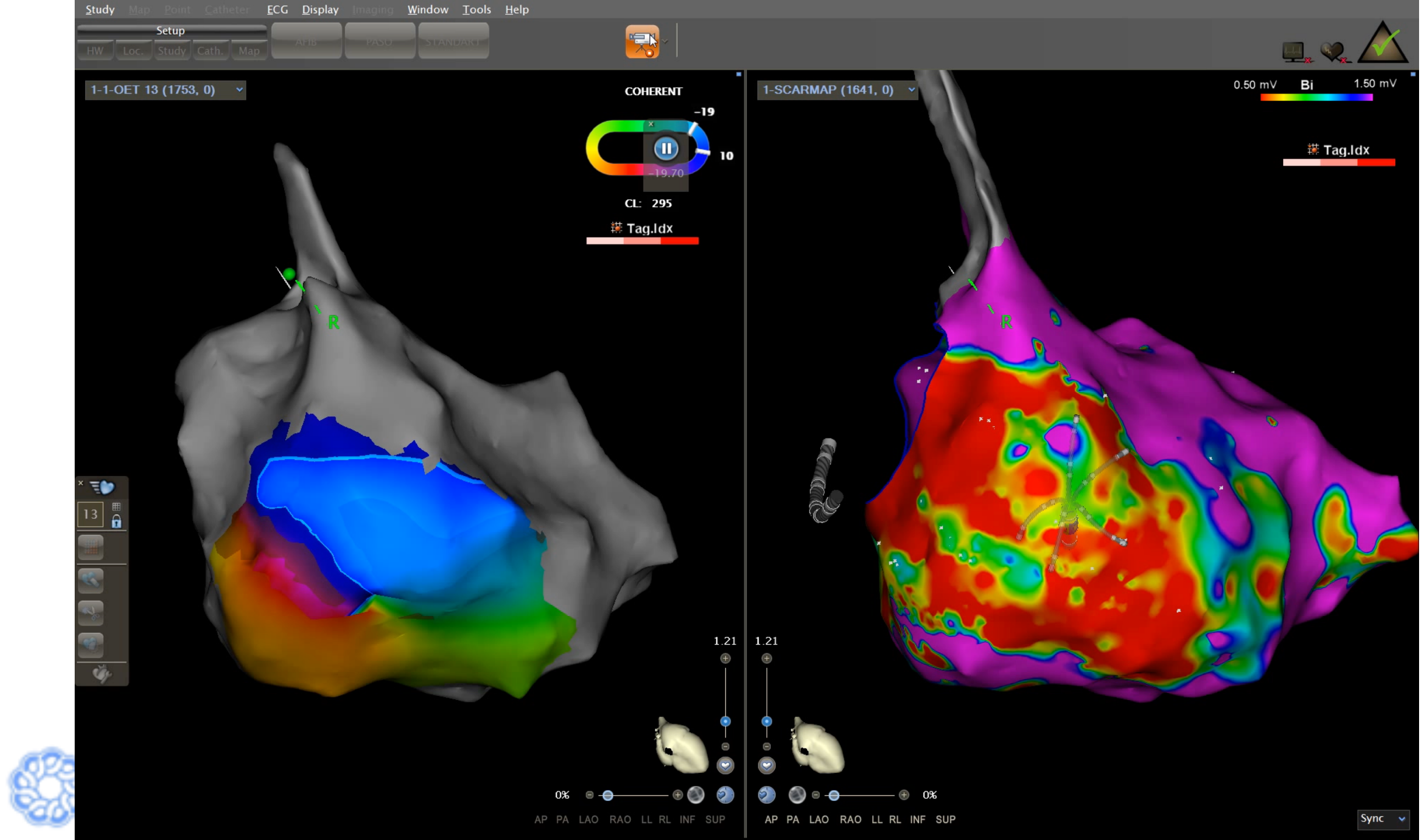

200 ms
I
II
S
III
aVF
aVR
aVL
V1
V2
V3
V4
V5
V6
Ls P
Ls 17,18
Ls 15,16
Ls 13,14
Ls 11,12
Ls 9,10
Ls 7,8
Ls 5,6
Ls 3,4
Ls D
CS 9,10
CS 1,2
RVa d
RVa p
Stim 1
4:20:31 PM
4:20:32 PM
4:20:33 PM

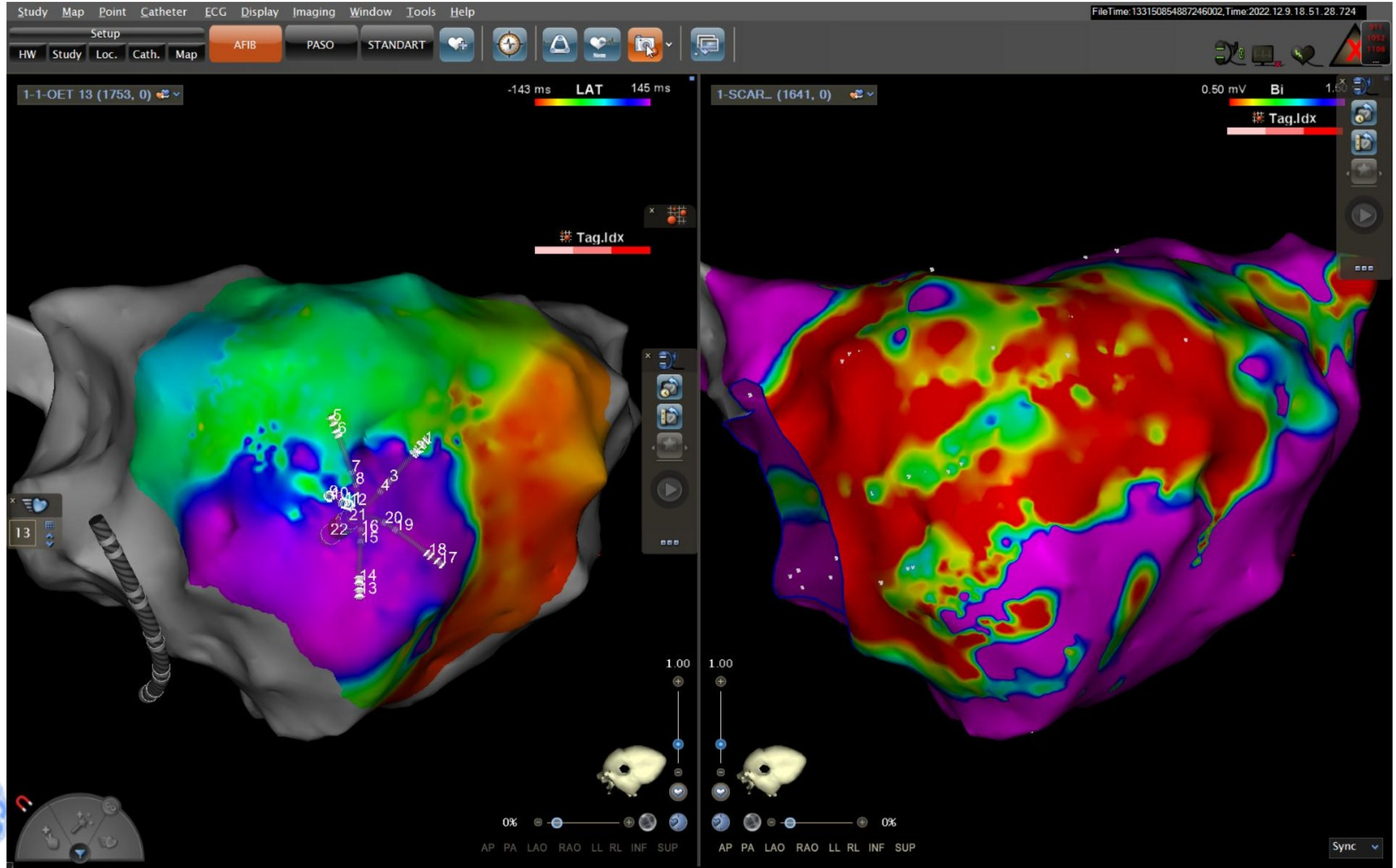
Stratejik multielektrod pozisyon haritalama (StaMP mapping)

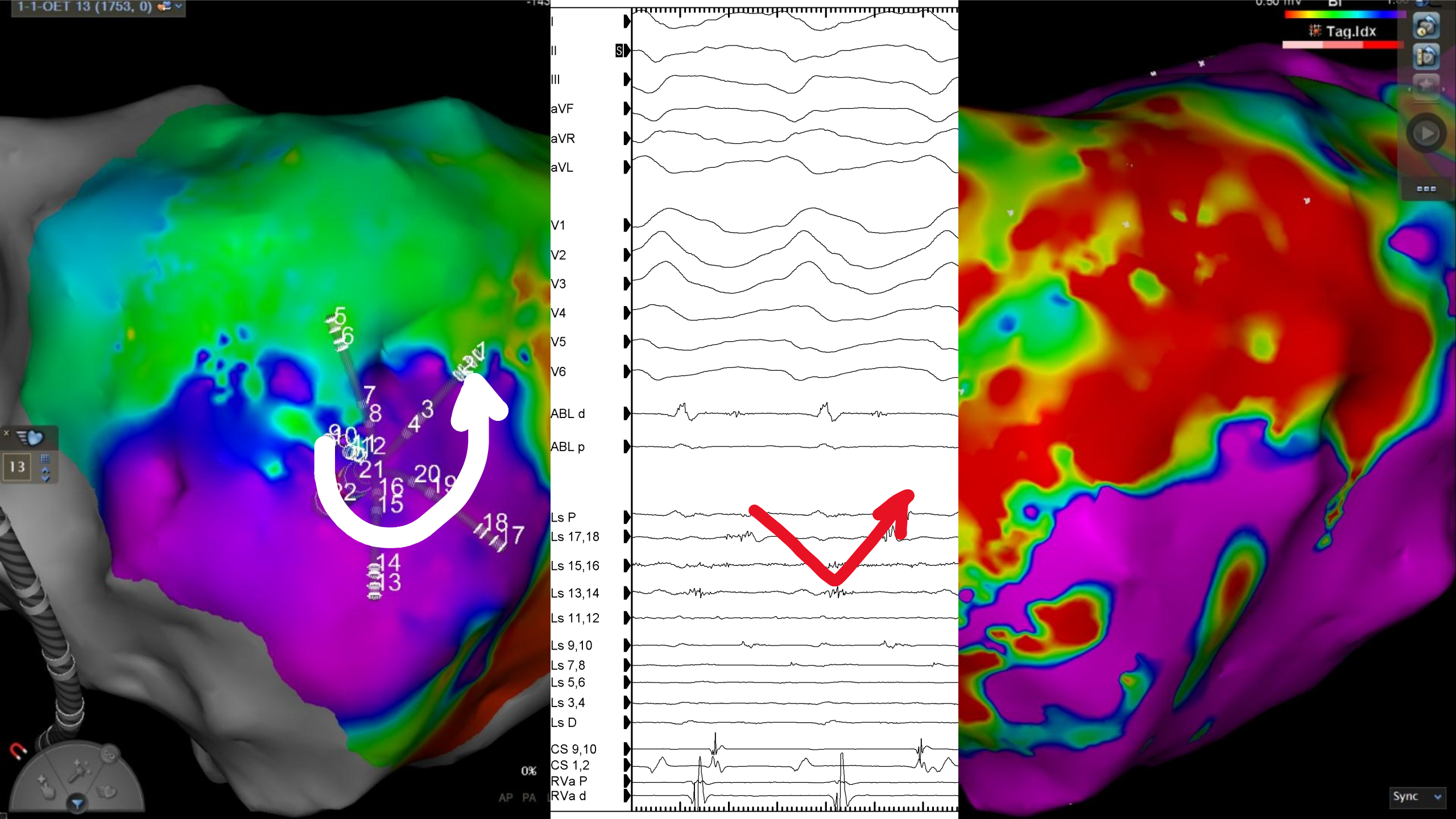
- Önce SR scar harita
- ILAM- DZ veya late fraksiyone potansiyel bölgesi hedef
- Kısa süreli VT indüksiyonu
- Amaç multielektrod kateter ile tüm diyastolik aktivasyon sekansını yakalamak
- Tüm diyastolü almaya çalışılırsa aktif WOI-manuel adjustment

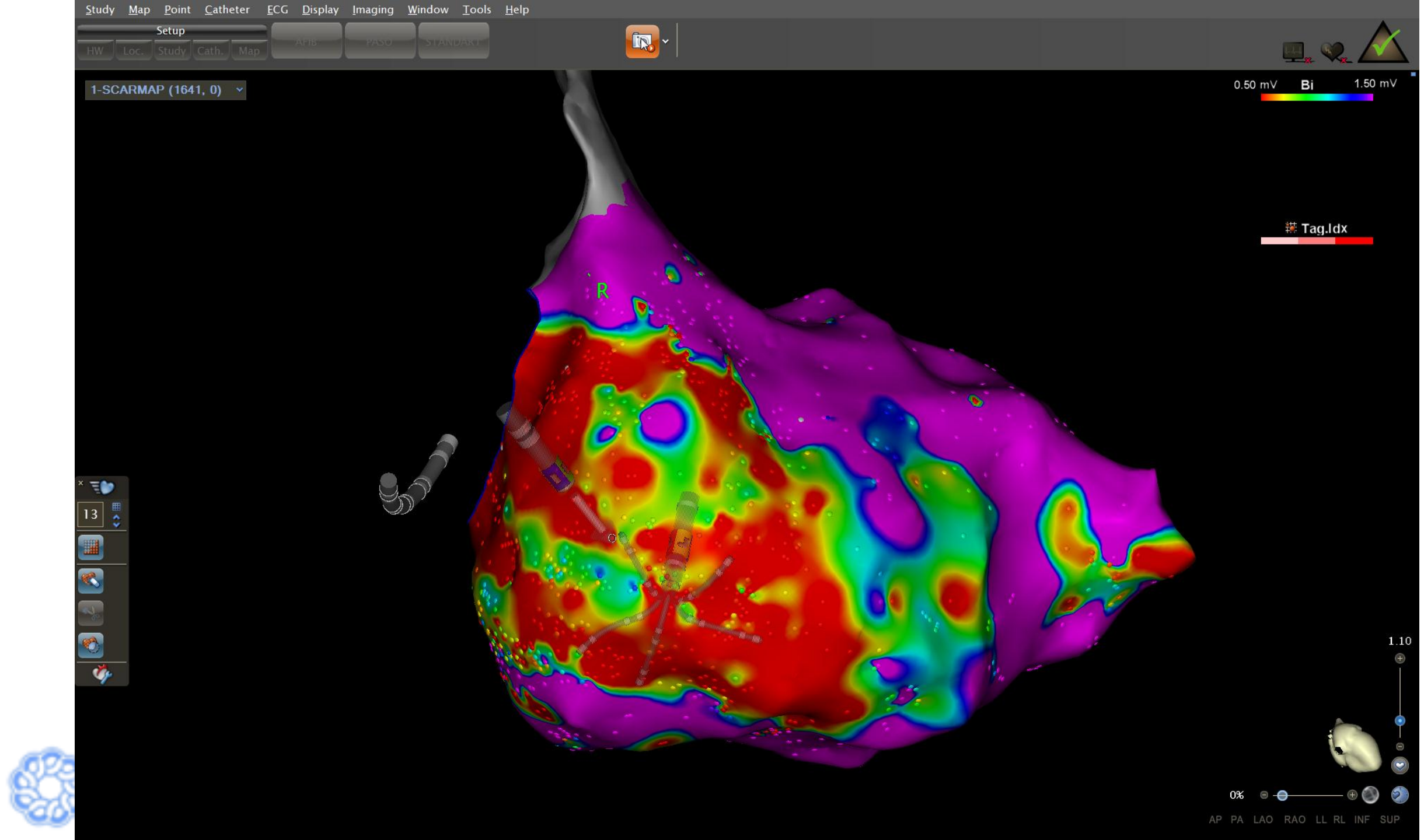

Study
Map
Point
Catheter
ECG
Display
Imaging
Window
Tools
Help
Setup
HW
Loc.
Study
Cath.
Map
1-SCARMAP (1641, 0)
0.50 mV
Bi
1.50 mV
Tag.Idx
R
13
1.10
0%
AP
PA
LAO
RAO
LL
RL
INF
SUP

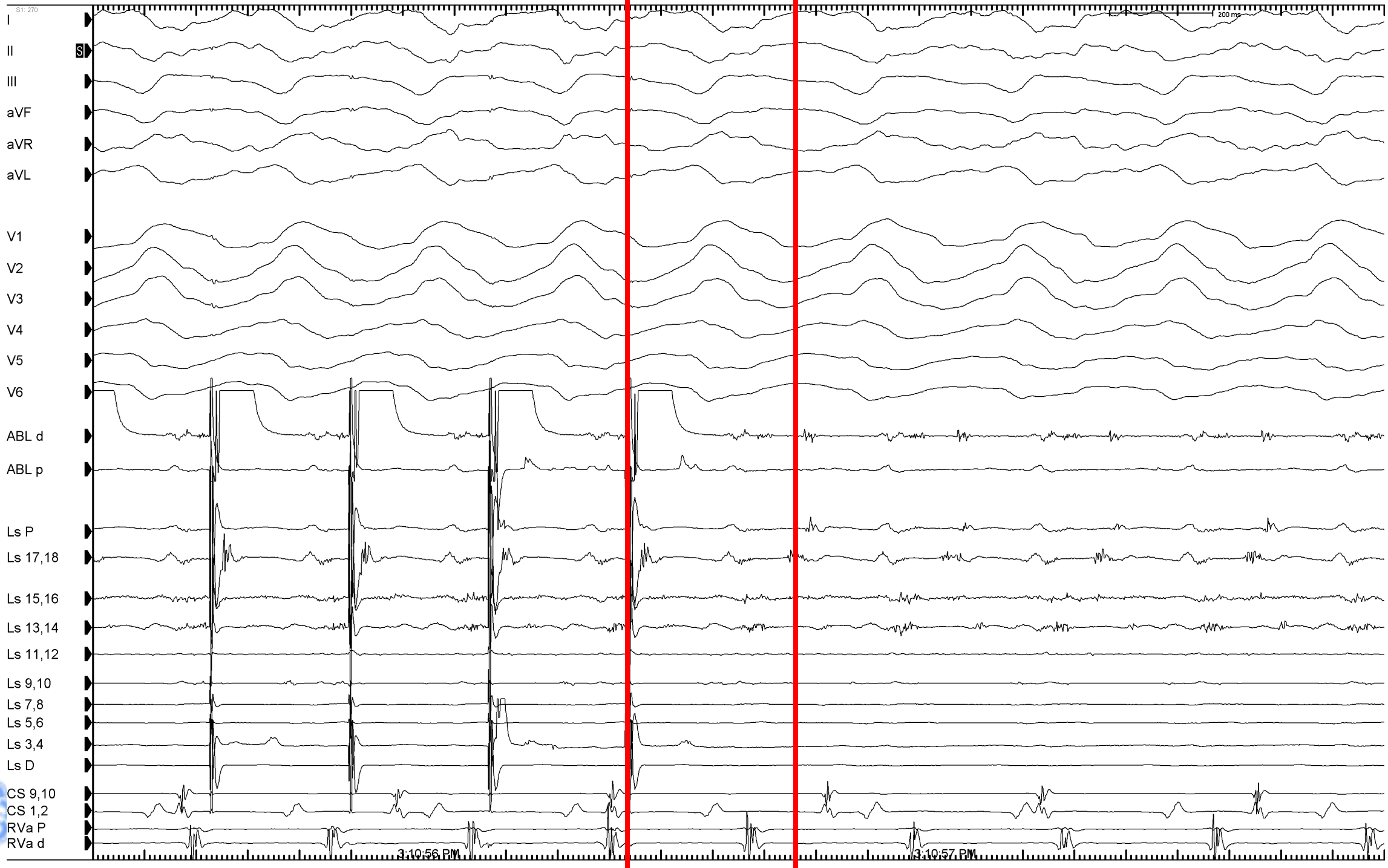

200 ms
I
II
III
aVF
aVR
aVL
V1
V2
V3
V4
V5
V6
ABL d
ABL p
Ls P
Ls 17,18
Ls 15,16
Ls 13,14
Ls 11,12
Ls 9,10
Ls 7,8
Ls 5,6
Ls 3,4
Ls D
CS 9,10
CS 1,2
RVa P
RVa d
3:09:23 PM
3:09:24 PM

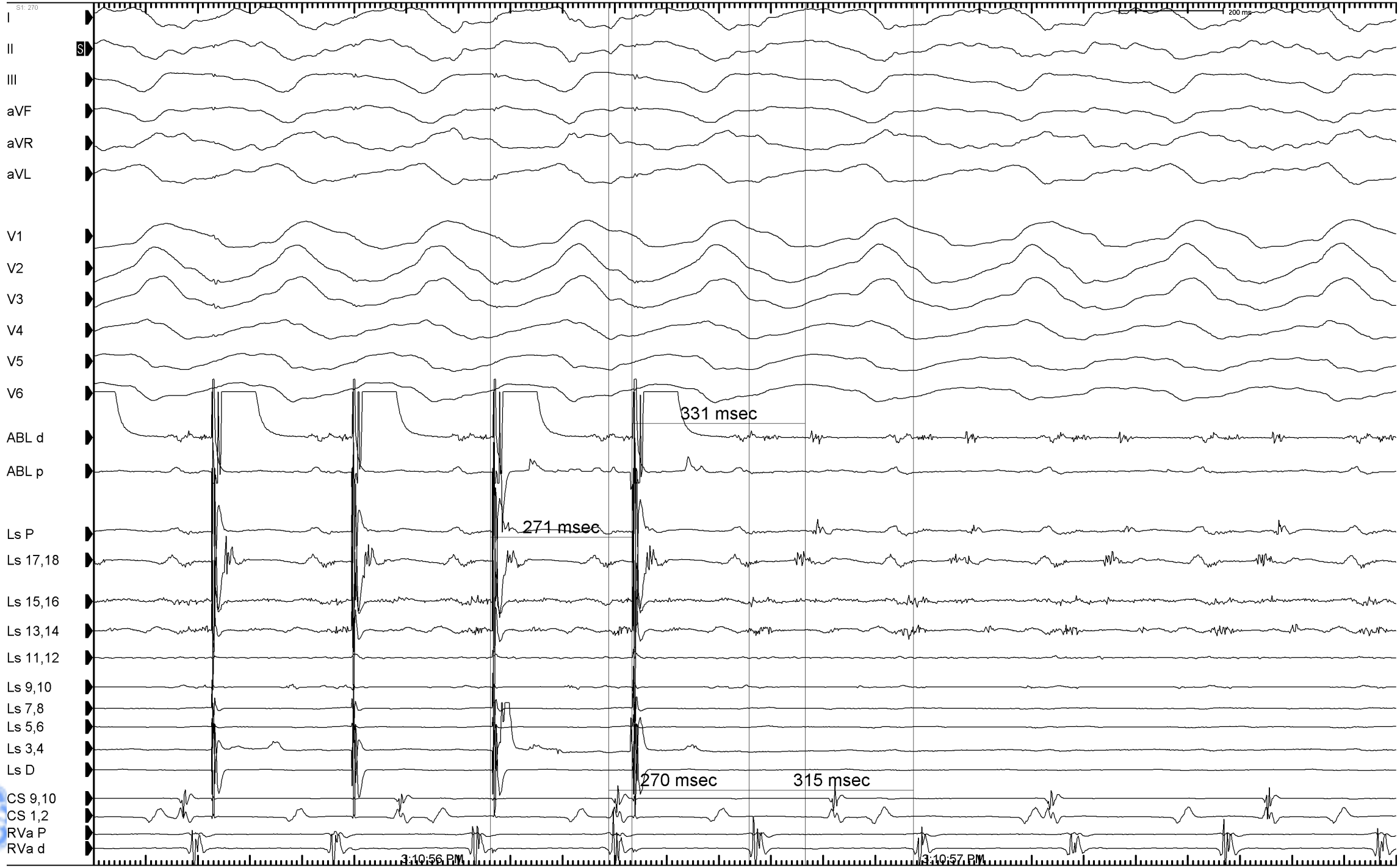

Study
Map
Point
Catheter
ECG
Display
Imaging
Window
Tools
Help
Setup
HW
Loc.
Study
Cath.
Map
AFIB
PASO
STANDART
1-1-OET 13 (1753, 0)
COHERENT
-19
10
-19.70
CL: 295
Tag.Idx
R
13
1.21
0%
AP PA LAO RAO LL RL INF SUP
1-SCARMAP (1641, 0)
0.50 mV
Bi
1.50 mV
Tag.Idx
R
1.21
0%
AP PA LAO RAO LL RL INF SUP
Sync

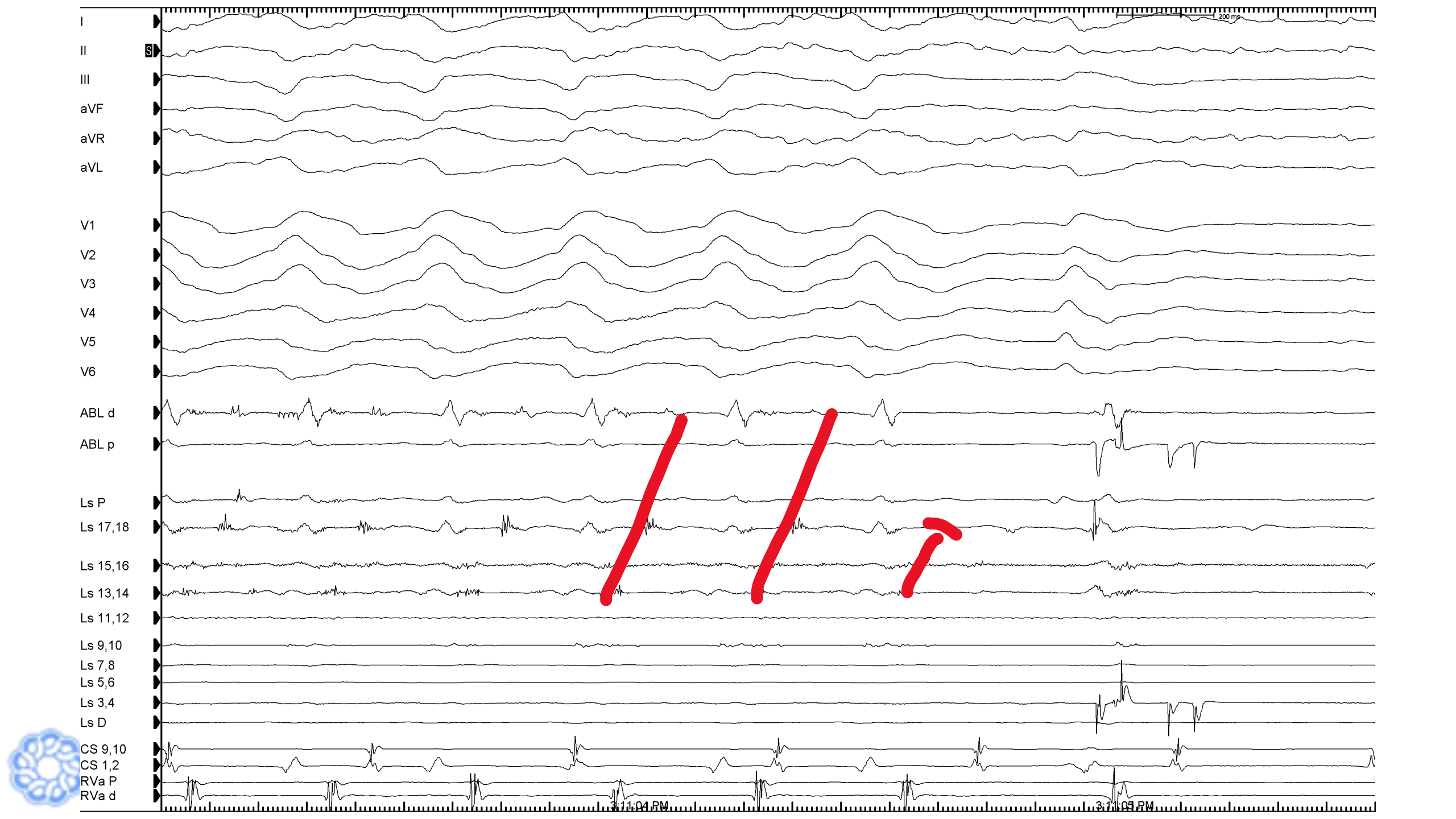

Study Map Point Catheter ECG Display Imaging Window Tools Help
FileTime:133150854887246002,Time:2022.12.9.18.51.28.724
Setup
HW Study Loc. Cath. Map
AFIB PASO STANDART
1-1-OET 13 (1753, 0)
-143 ms LAT 145 ms
Tag.Idx
13
1.00
0%
AP PA LAO RAO LL RL INF SUP
1-SCAR.. (1641, 0)
0.50 mV Bi
Tag.Idx
1.00
0%
AP PA LAO RAO LL RL INF SUP
Sync

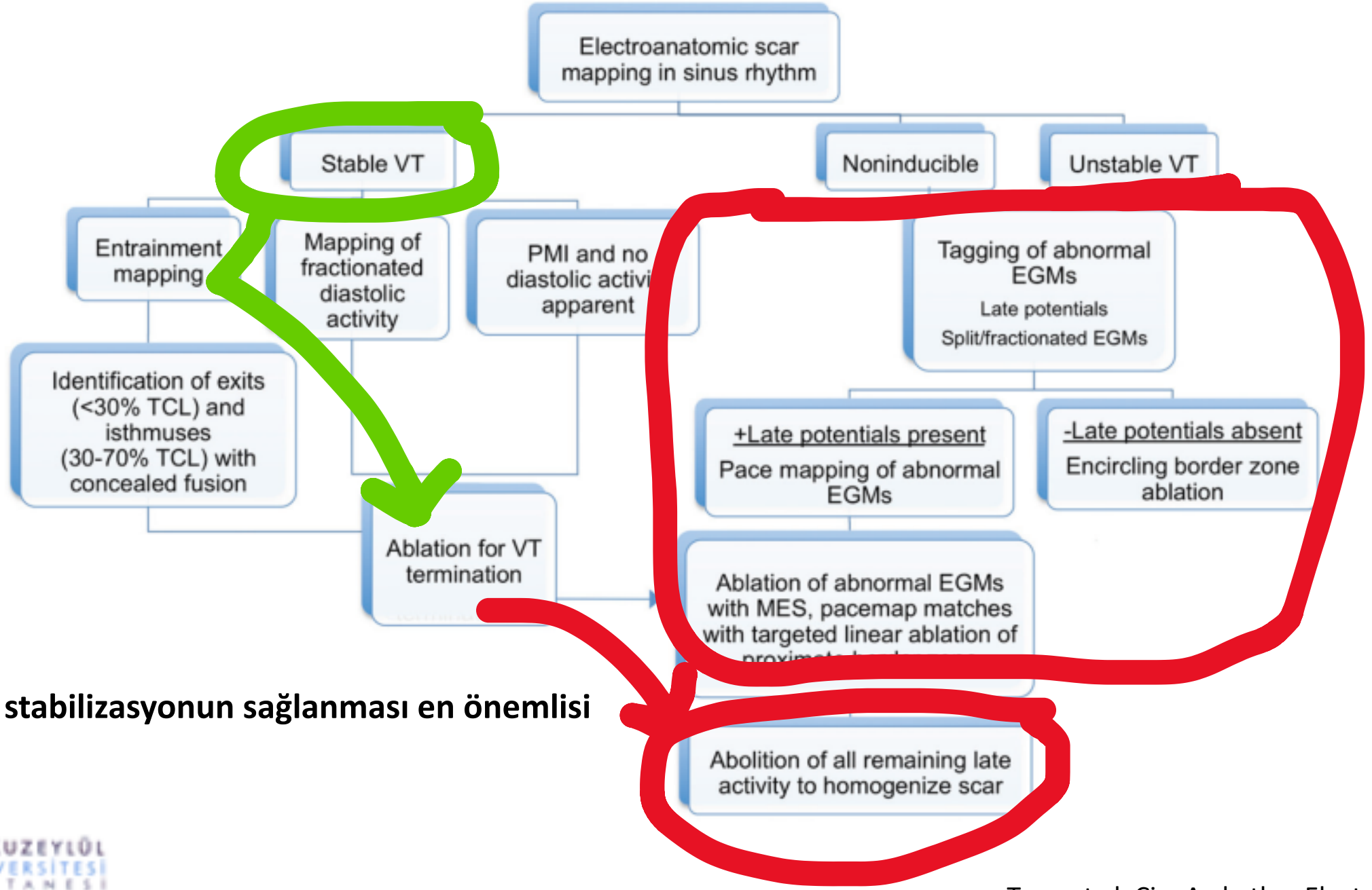

1-1-OET 13 (1753, 0)
13
0%
AP PA
I
II
III
aVF
aVR
aVL
V1
V2
V3
V4
V5
V6
ABL d
ABL p
Ls P
Ls 17,18
Ls 15,16
Ls 13,14
Ls 11,12
Ls 9,10
Ls 7,8
Ls 5,6
Ls 3,4
Ls D
CS 9,10
CS 1,2
RVa P
RVa d
Tag.Idx
Sync


Study
Map
Point
Catheter
ECG
Display
Imaging
Window
Tools
Help
Setup
HW
Loc.
Study
Cath.
Map
1-SCARMAP (1641, 0)
0.50 mV
Bi
1.50 mV
Tag.Idx
R
13
1.10
0%
AP
PA
LAO
RAO
LL
RL
INF
SUP


S1: 270
200 ms
I
II
III
aVF
aVR
aVL
V1
V2
V3
V4
V5
V6
ABL d
ABL p
Ls P
Ls 17,18
Ls 15,16
Ls 13,14
Ls 11,12
Ls 9,10
Ls 7,8
Ls 5,6
Ls 3,4
Ls D
CS 9,10
CS 1,2
RVa P
RVa d
3:10:56 PM
3:10:57 PM


S1: 270
200 ms
I
II
III
aVF
aVR
aVL
V1
V2
V3
V4
V5
V6
ABL d
ABL p
Ls P
Ls 17,18
Ls 15,16
Ls 13,14
Ls 11,12
Ls 9,10
Ls 7,8
Ls 5,6
Ls 3,4
Ls D
CS 9,10
CS 1,2
RVa P
RVa d
331 msec
271 msec
270 msec
315 msec
3:10:56 PM
3:10:57 PM


I
II
III
aVF
aVR
aVL
V1
V2
V3
V4
V5
V6
ABL d
ABL p
Ls P
Ls 17,18
Ls 15,16
Ls 13,14
Ls 11,12
Ls 9,10
Ls 7,8
Ls 5,6
Ls 3,4
Ls D
CS 9,10
CS 1,2
RVa P
RVa d
200 ms
3:11:04 PM
3:11:05 PM



Hastanın stabilizasyonun sağlanması en önemlisi

DOKUZEYLÜL ÜNİVERSİTESİ HASTANESİ

Tung et al. Circ Arrhythm Electrophysiol. 2012

İşlem öncesi HD değerlendirme ve hazırlık

- Hastanın hemodinamik ve metabolik durumu
- Konjesyon durumu
- Betabloker ve ACE inh dozlarının atlanması
- İnotrop gerekliliği
- Mekanik HD gerekliliği
- Anestezinin tipi ve derinliği
- VT'lerin HD toleransı
- Ablasyon stratejisinin belirlenmesi (Substrat ablasyonu veya substrat/ILAM kılavuzluğunda kısa aktivasyon haritalama)

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