11th ANNUAL CONFERENCE OF INDIAN HEART RHYTHM SOCIETY

# FAILED SVT ABLATION


Dr. Ulhas M. Pandurangi MD., DM

Chief – Cardiac Electrophysiology & Pacing

*Arrhythmia Heart Failure Academy*

The Madras Medical Mission

*Founder President: Tamilnadu Electrophysiology Council*

*President Elect: Indian Society of Electrocardiology*

# *There are many reasons for Failed SVT Ablation*

Commonest reason is :

You Quoted a reason !

because

You could not do it

# FAILED SVT ABLATION

**AVNRT**

- Narrow Koch Triangle
- Large CS
- Left inferior slow pathway
- Baseline prolonged PR interval

**MAHAIM**

- Bumping
- Diagnosed as AVNRT with LBBB
- Varying length and insertion

**AP**

- Epicardial
- Oblique
- Multiple
- Ebstein
- Duodromic
- Unusual location

**AT**

- Unusual Location
- Phrenic nerve, adjacent structure damage
- Around sinus node region

# FAILED SVT ABLATION

- Structural/ Congenital heart disease
- Fasciculo ventricular pathway
- Non Inducibility
- Today AVNRT tomorrow AF/ Today VT tomorrow it is AF
- Different SVT- Same patient
- Inadequate mapping and ablation tools

# AVNRT

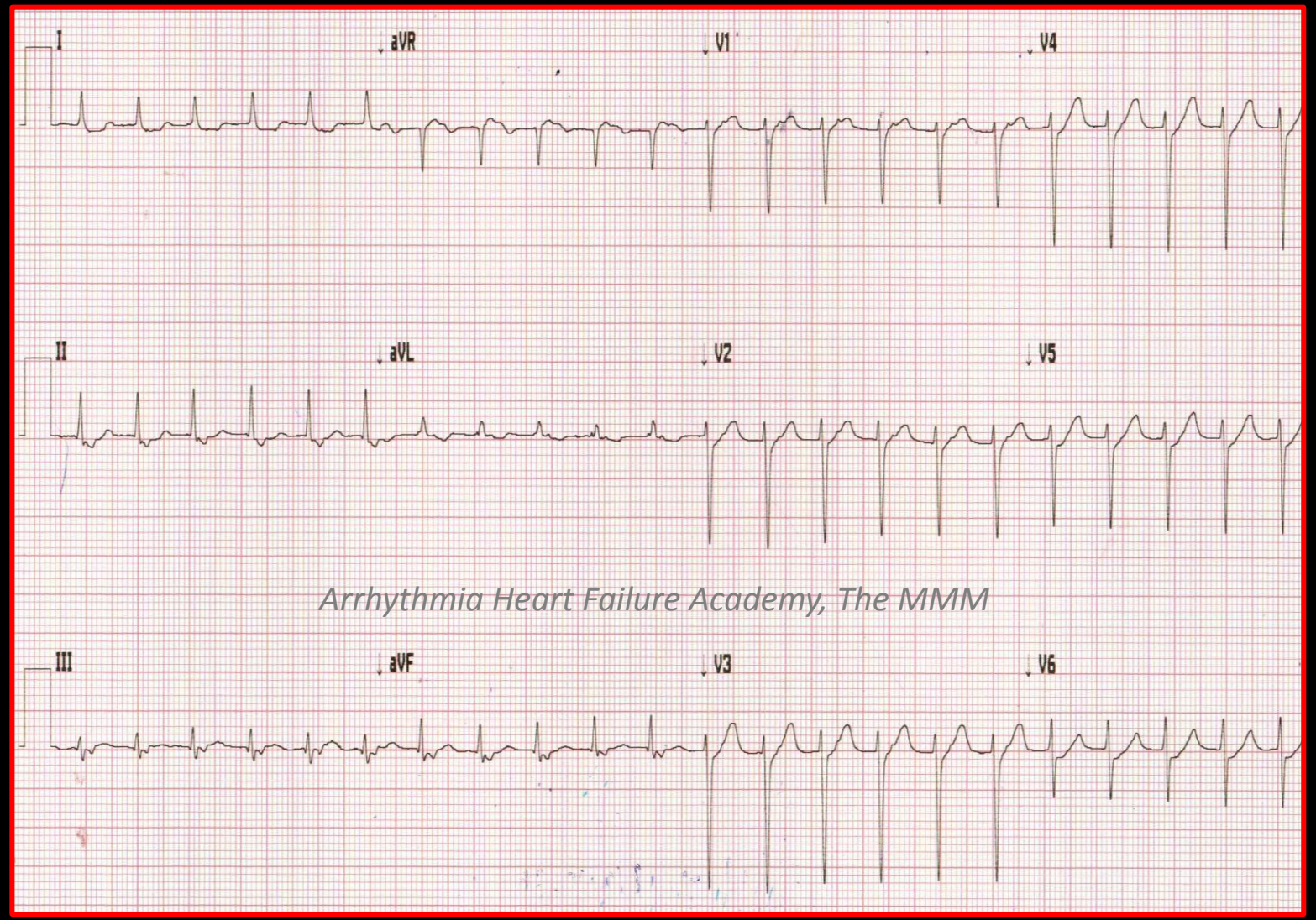
Narrow Koch Triangle

Dilated CS ostium

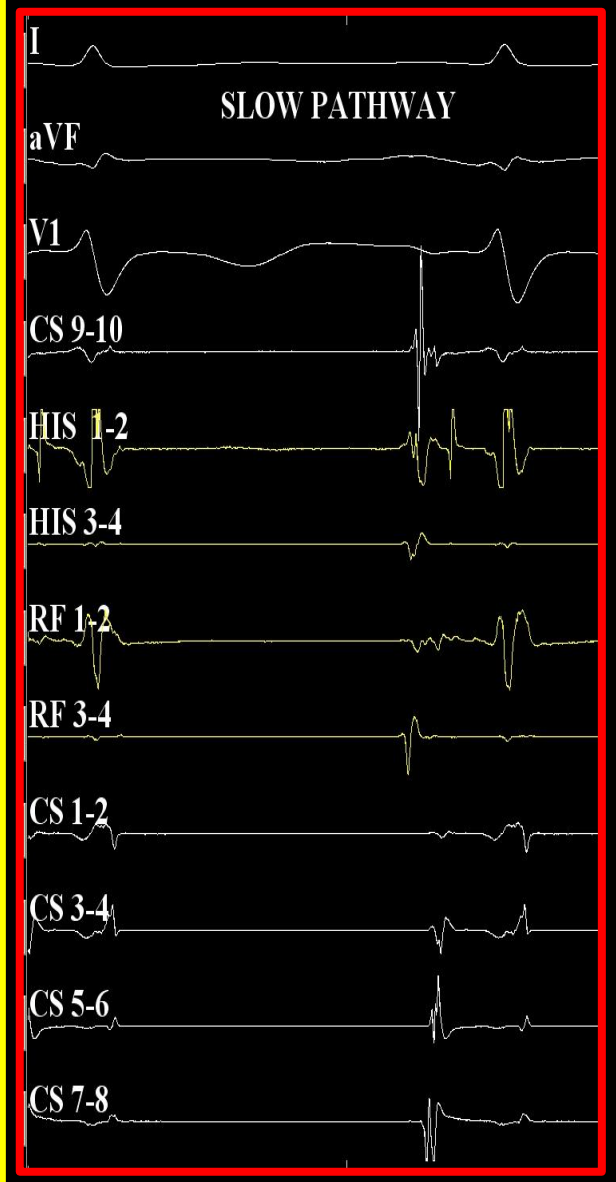
Left sided slow pathway

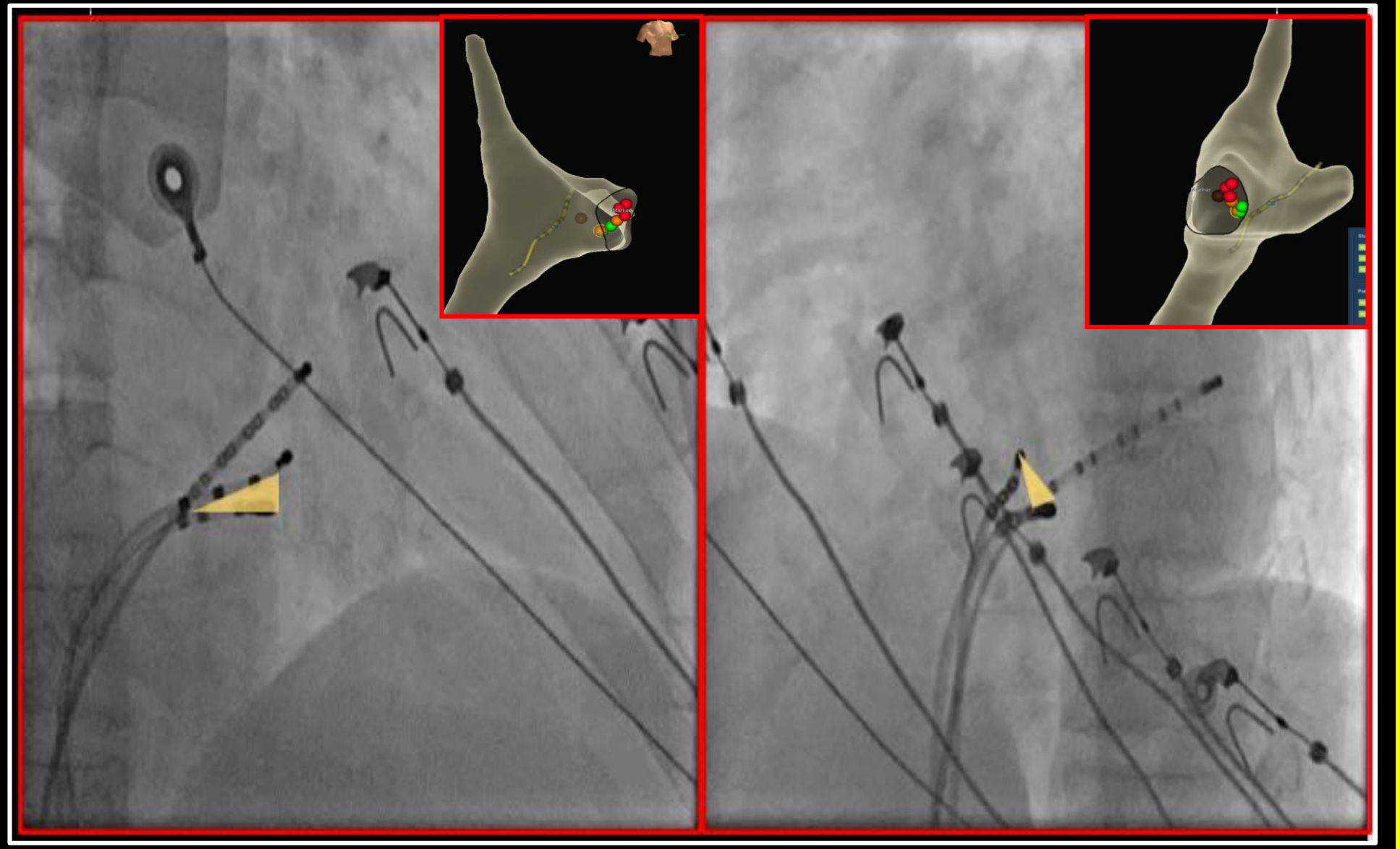
Baseline prolonged PR

# Left sided Slow Pathway

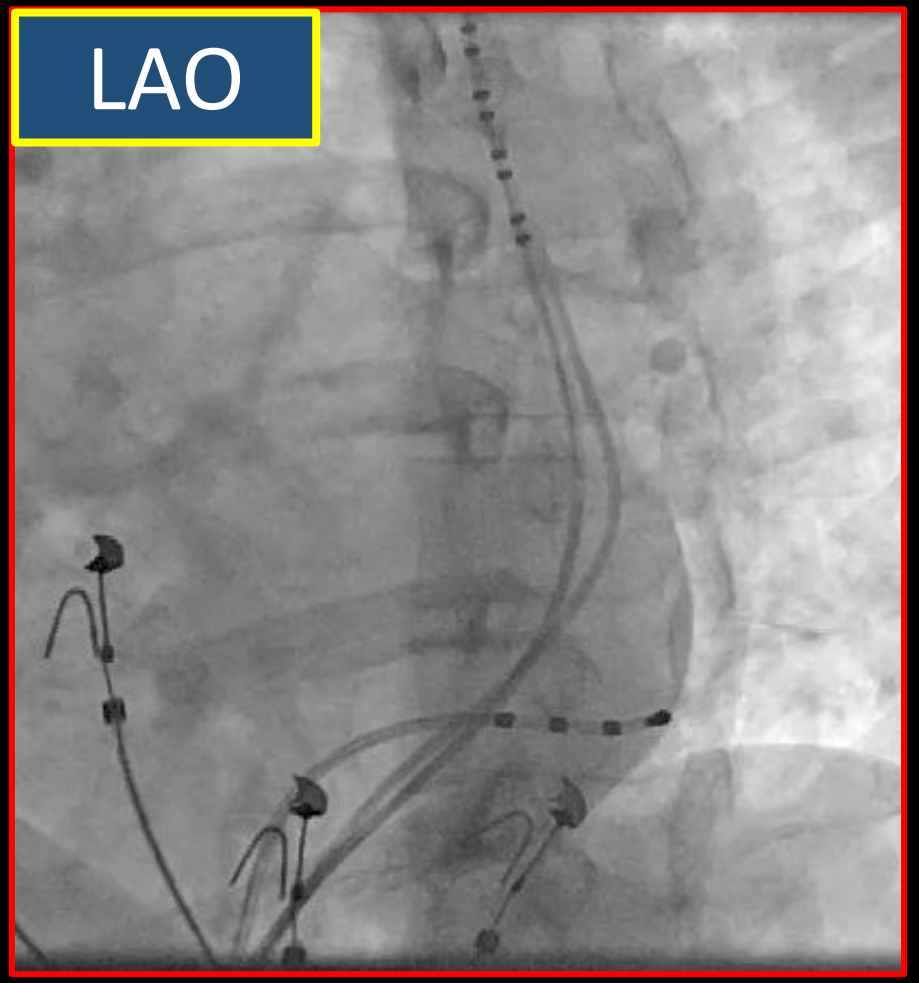


# Narrow Koch triangle, Steady junctional beats with intact VA conduction



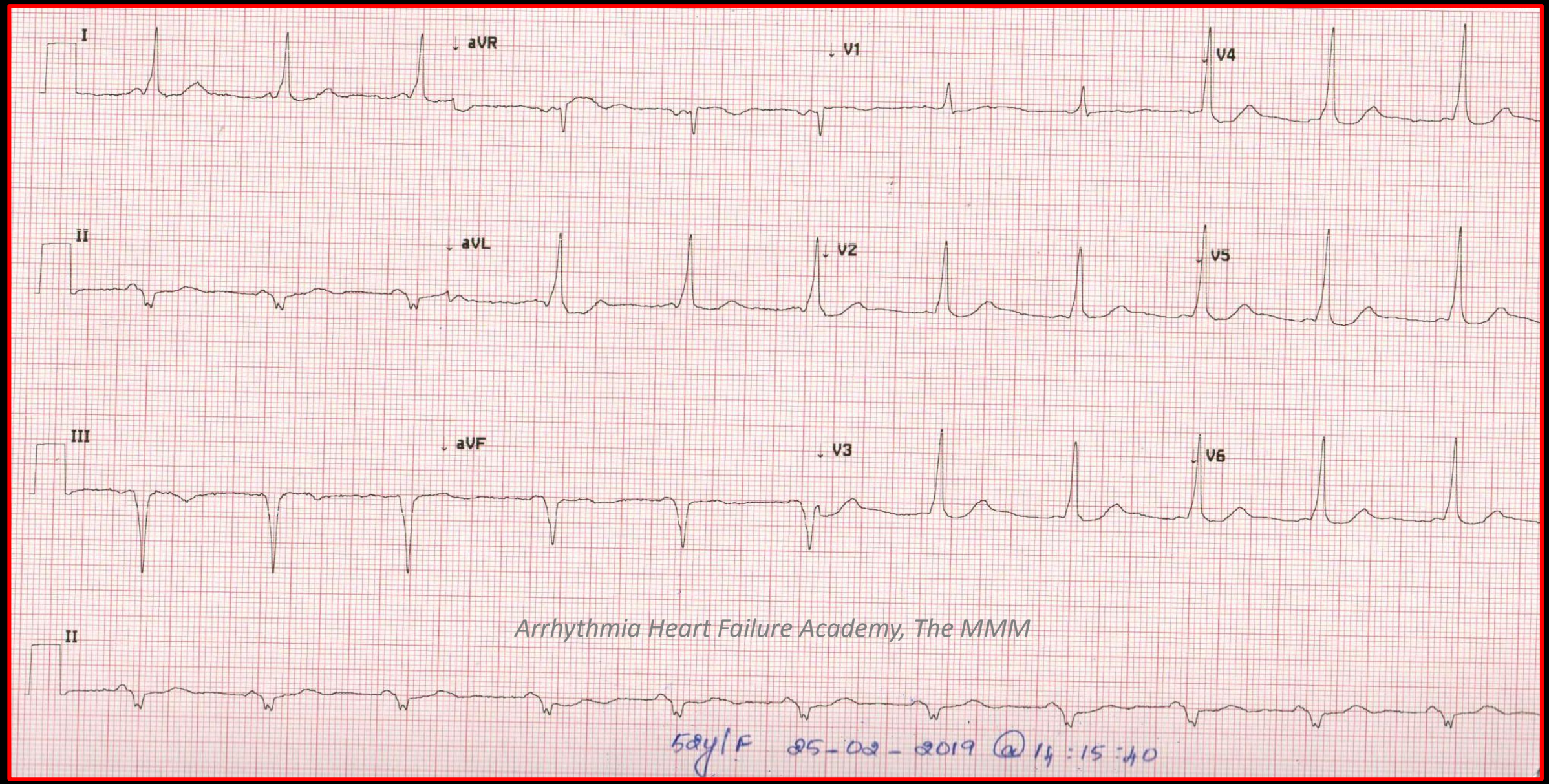
# DILATED CS OSTIUM

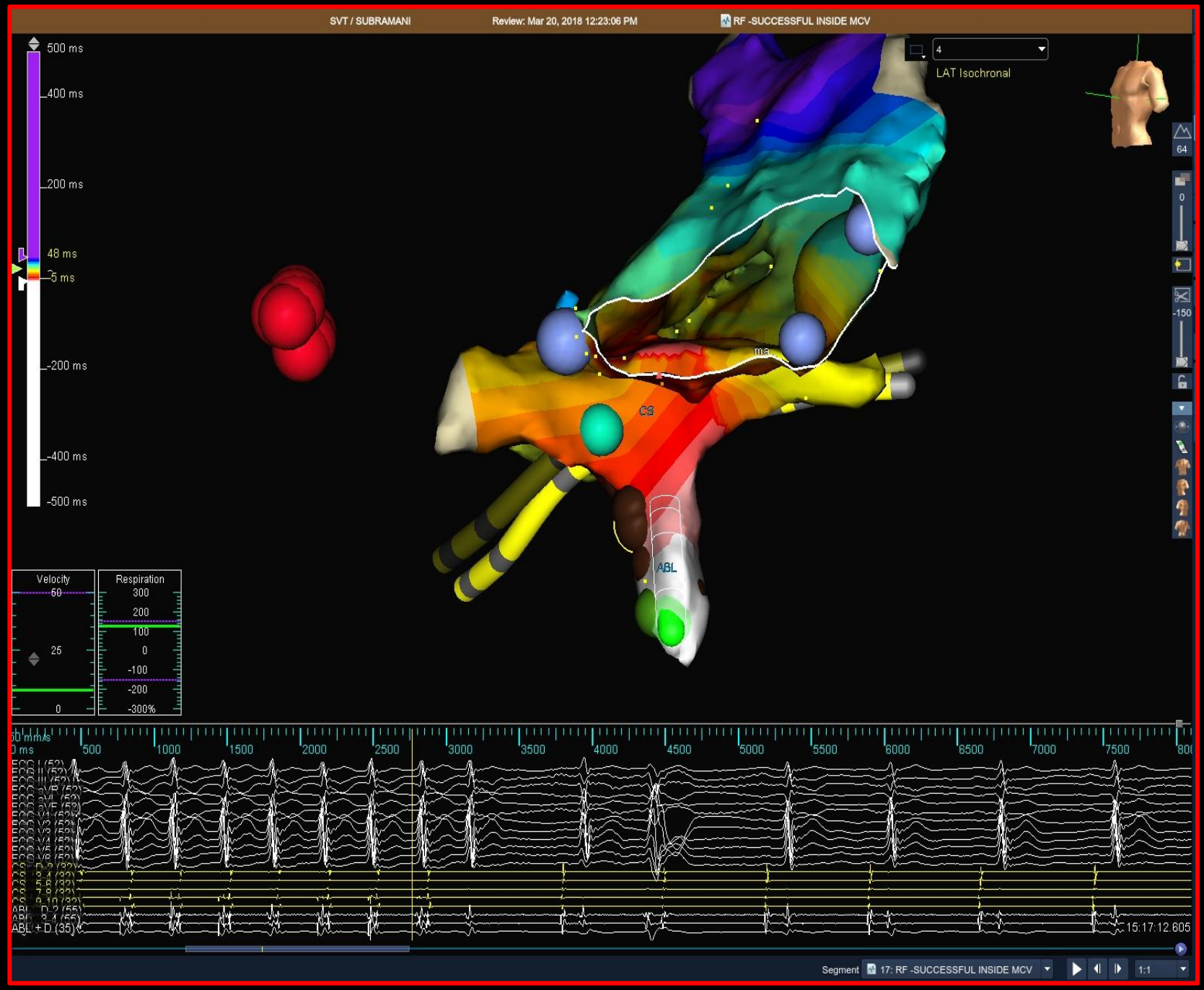



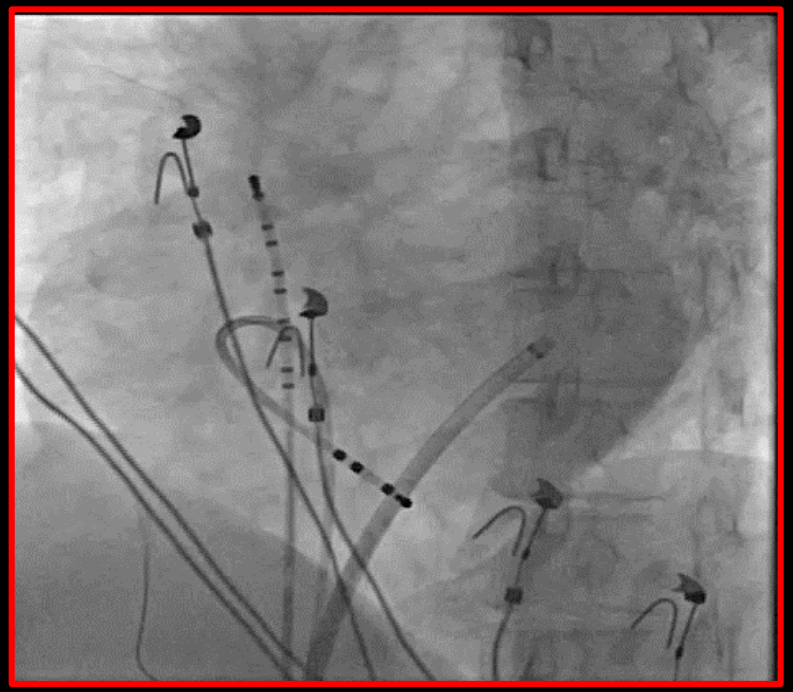
# AP

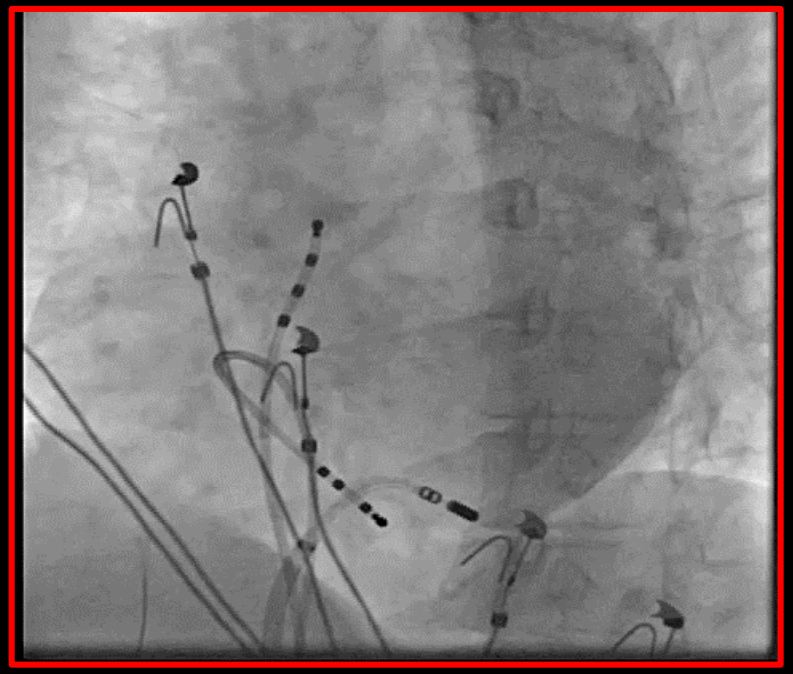
- Epicardial
- Oblique
- Multiple
- Pseudo AVNRT
- Duodromic
- Ebstein

# EPICARDIAL


I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
II
Arrhythmia Heart Failure Academy, The MMM
58y/F 25-02-2019 @ 14:15:40


SVT / SUBRAMANI
Review: Mar 20, 2018 12:23:06 PM
RF -SUCCESSFUL INSIDE MCV
LAT Isochronal
500 ms
400 ms
200 ms
48 ms
5 ms
-200 ms
-400 ms
-500 ms
CS
ABL
Velocity
Respiration
15:17:12.805
Segment
17: RF -SUCCESSFUL INSIDE MCV



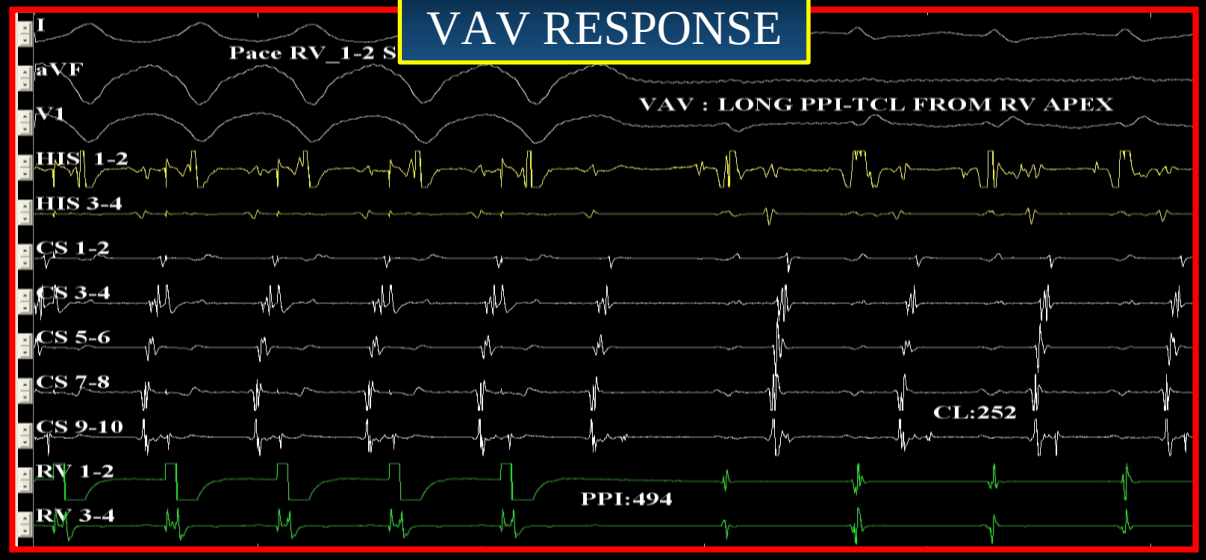


# ATYPICAL AVNRT (?)

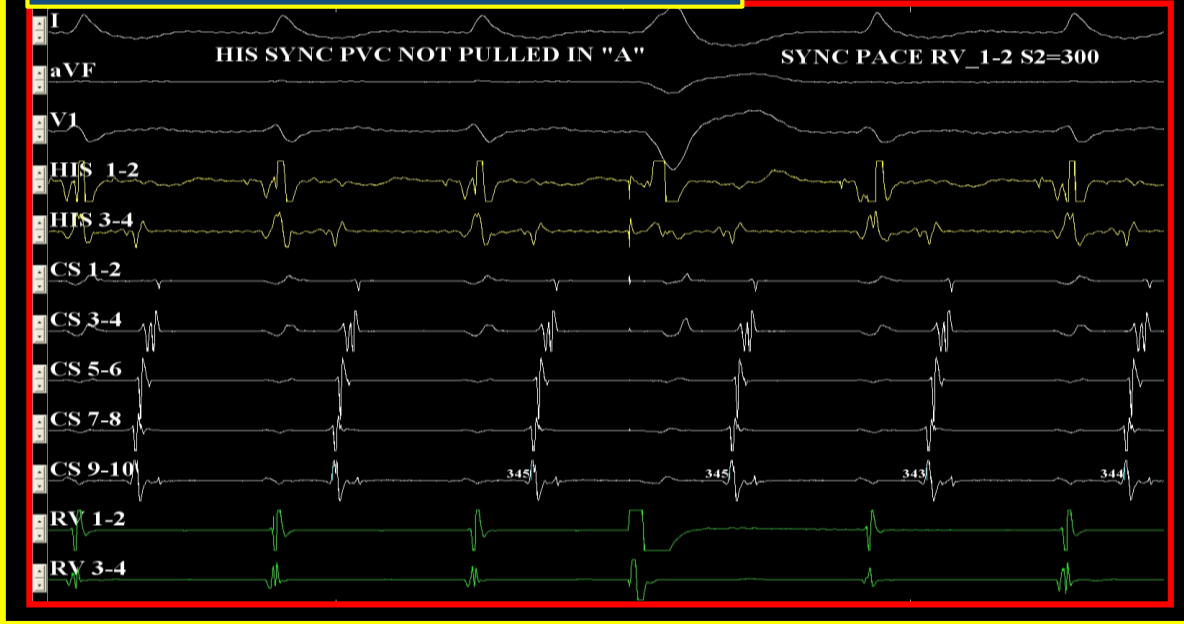
# 38Y, F, H/o Failed ablation twice (6 months and 2 years back)

## Induction without AH jump


## VAV RESPONSE



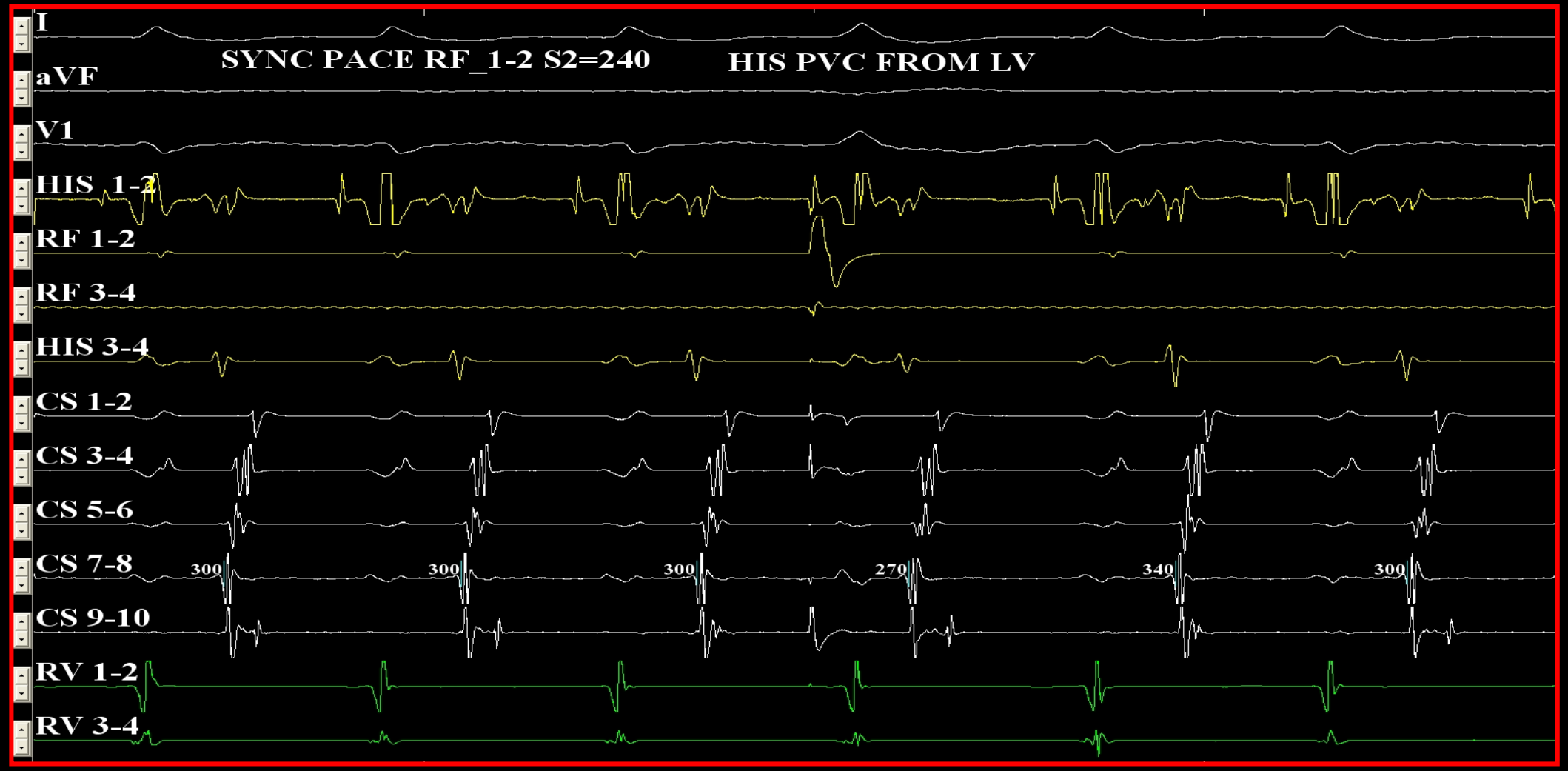

## HIS PVC FROM RV: NOT PULLING IN A



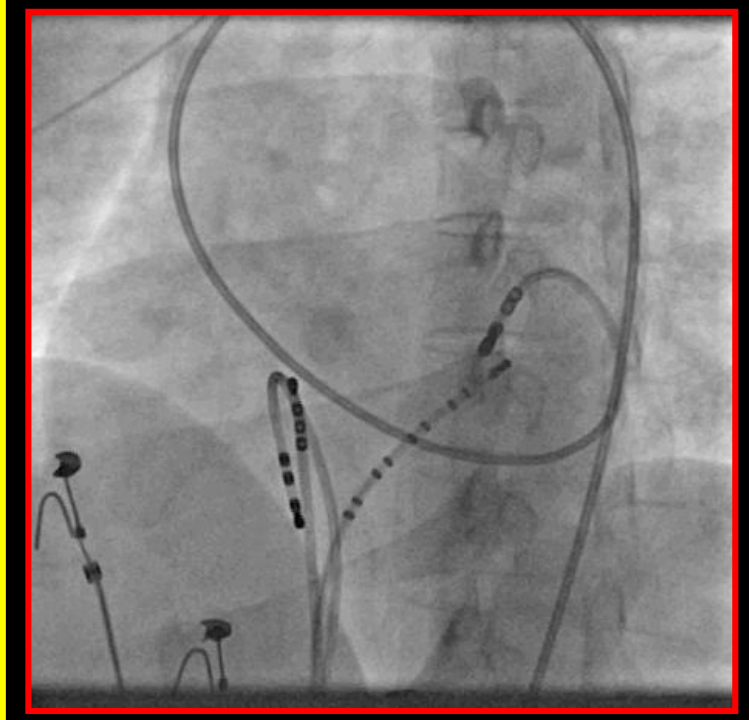

Hence it was diagnosed as atypical AVNRT
Extensive lesions were delivered at slow pathway
It was considered again as “failed ablation”

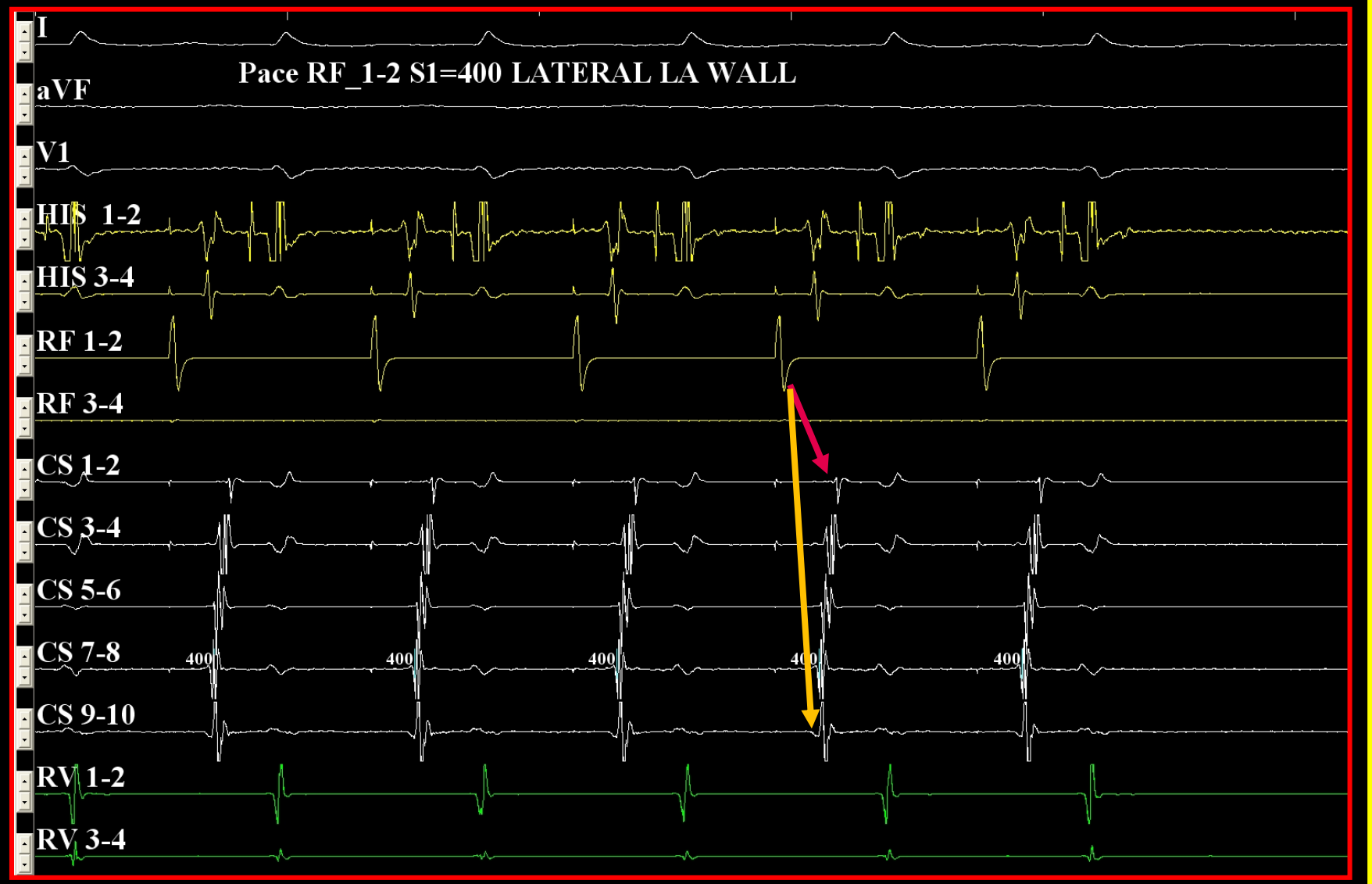
# In view of past history of two times ablation, possibility of " Mitral Isthmus Block" due to ablation of left AP was thought of

## HIS PVC FROM LV: PULLING IN A

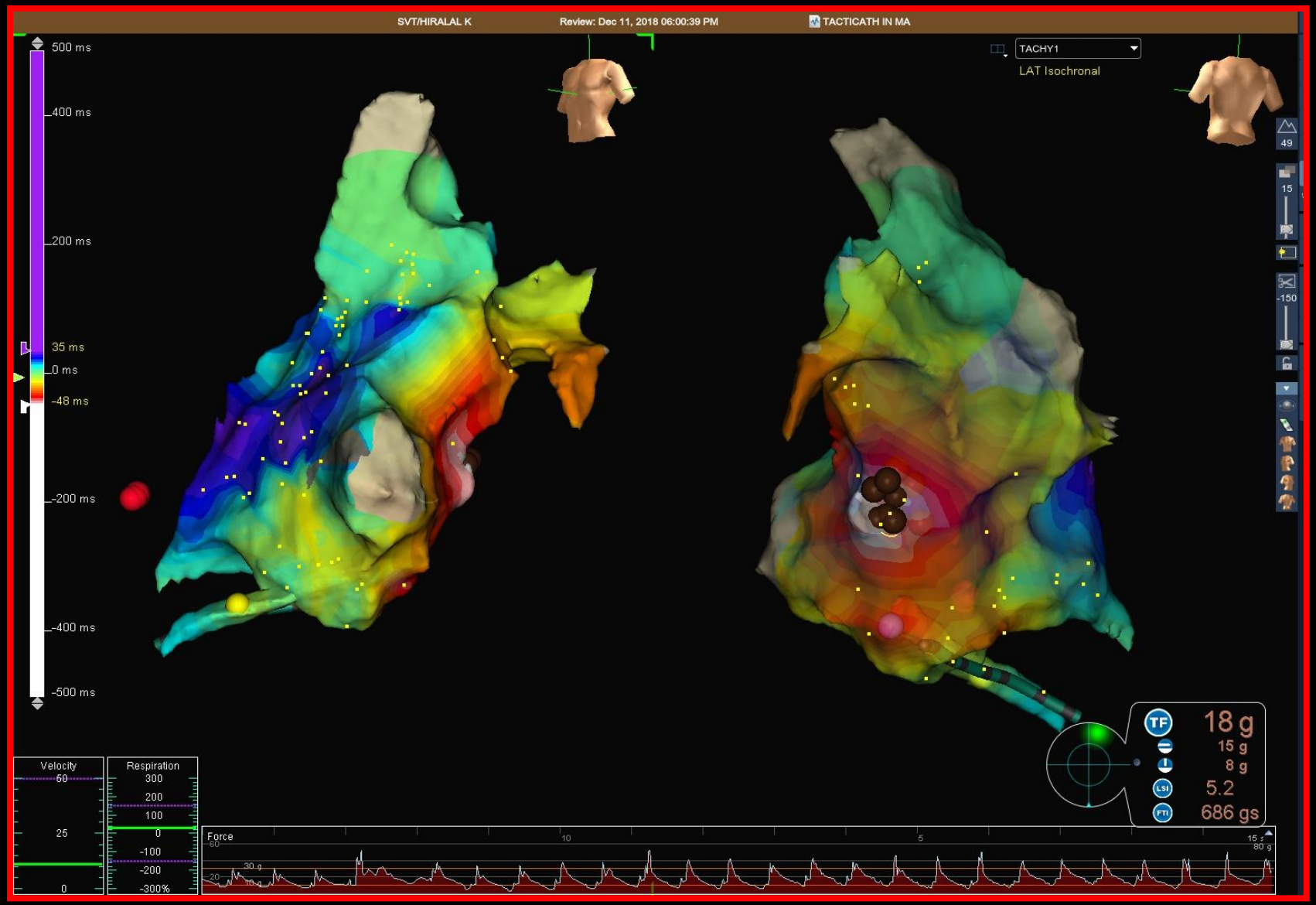


# Pacing from lateral mitral annular region: mitral isthmus block





# Ablation site



# EBSTEIN ANAMOLY

13-year-old female

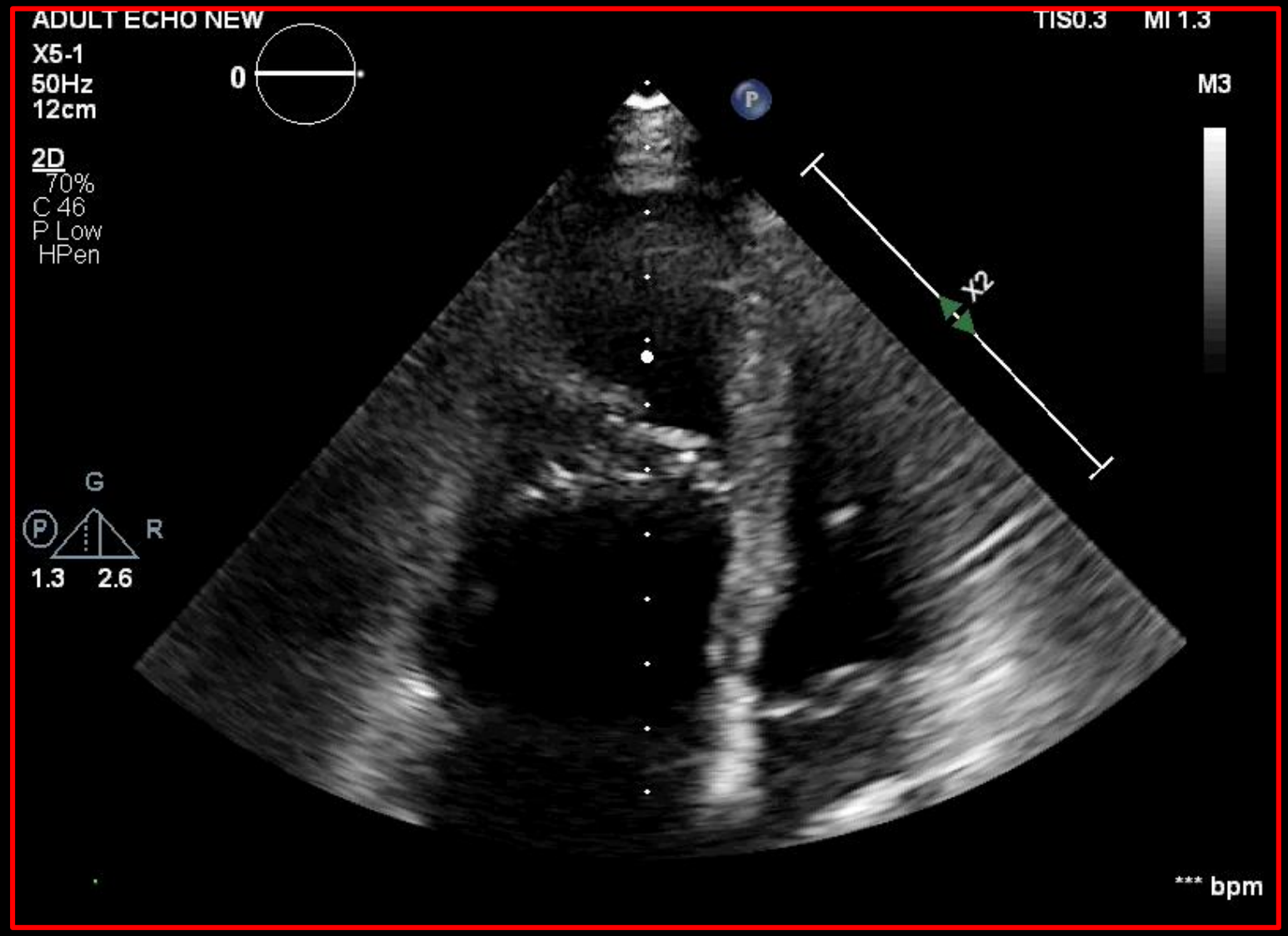
Ebsteins’ anomaly

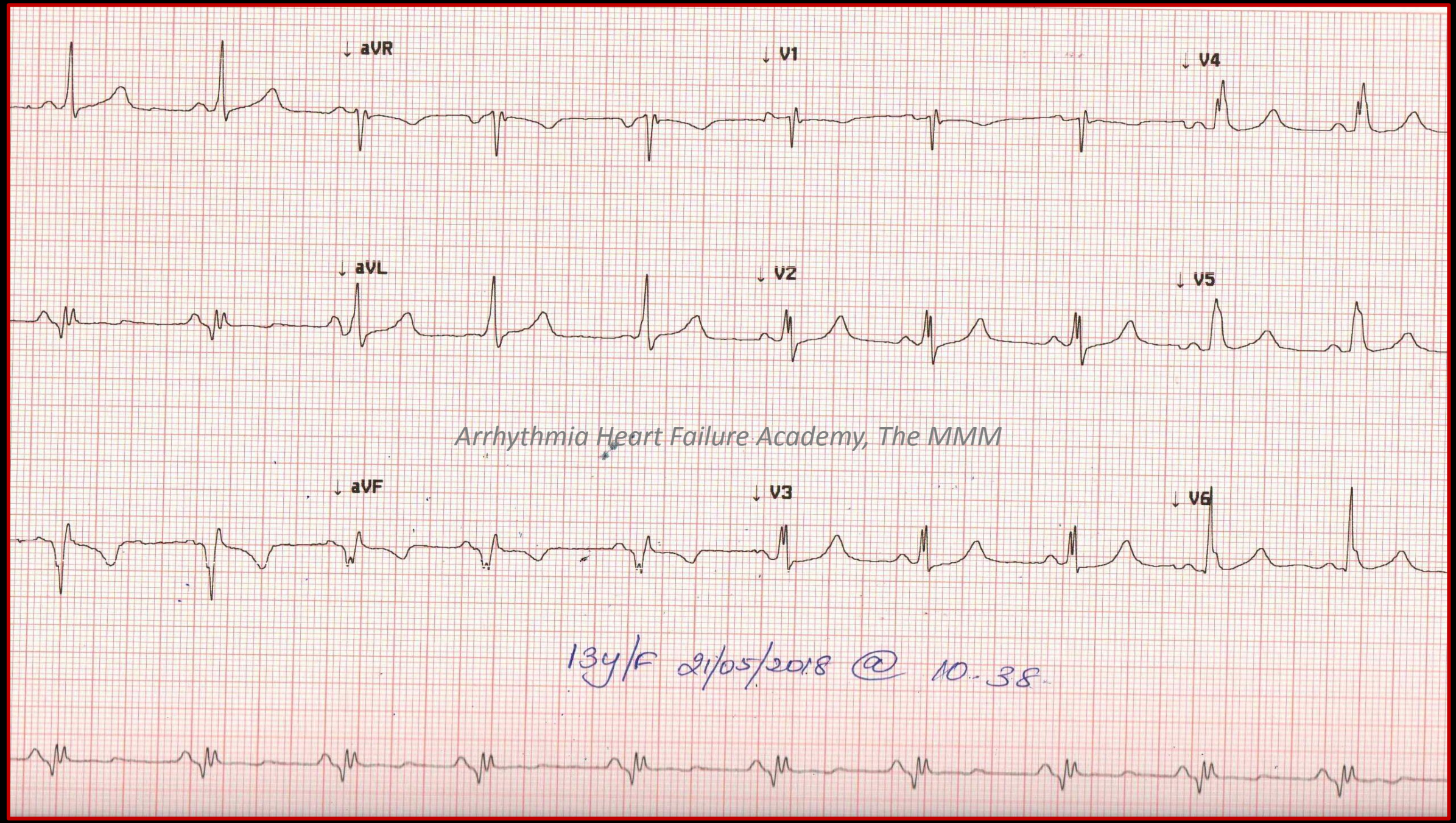
Coexistent large ASD

Recurrent palpitations

H/O Ablation for RPS pathway

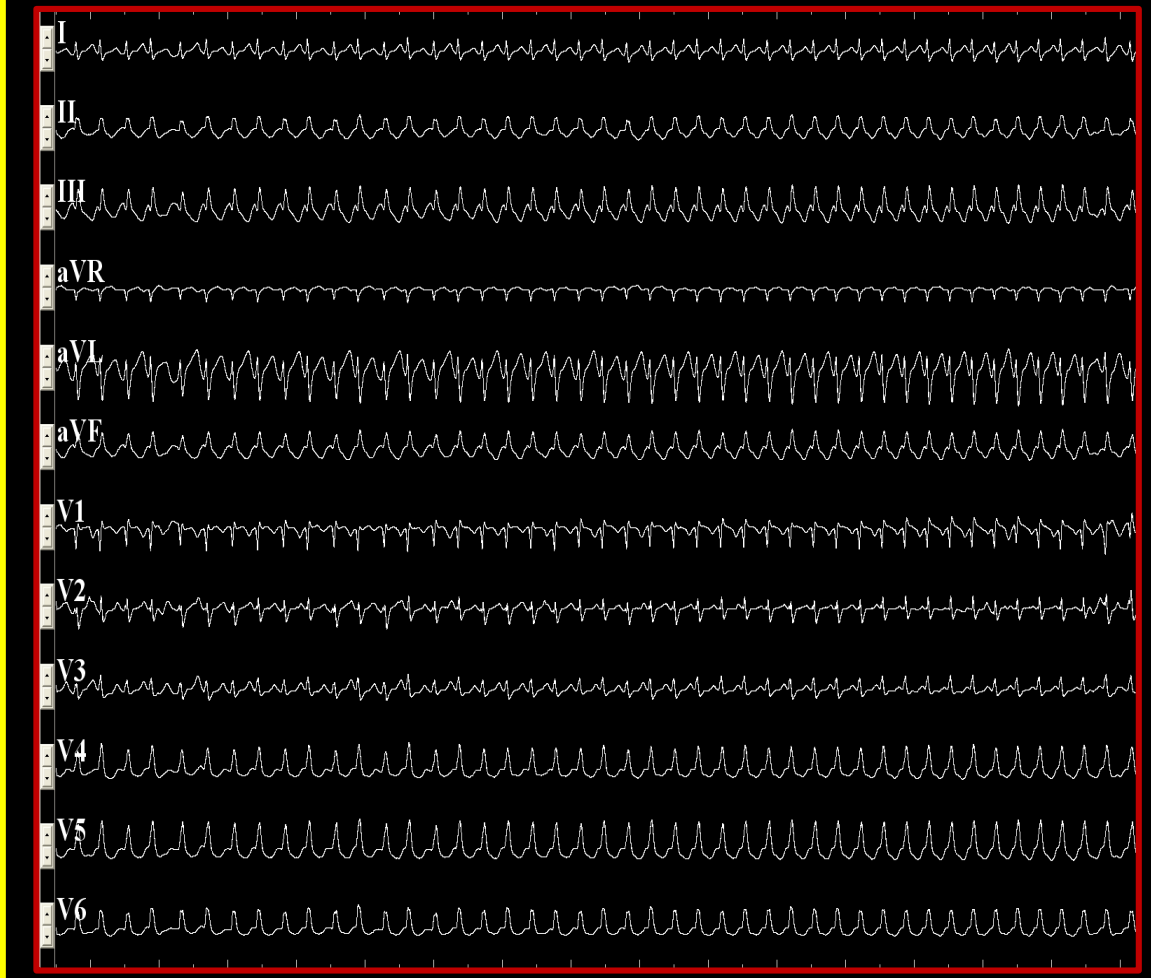
Plan: RFA followed by surgery

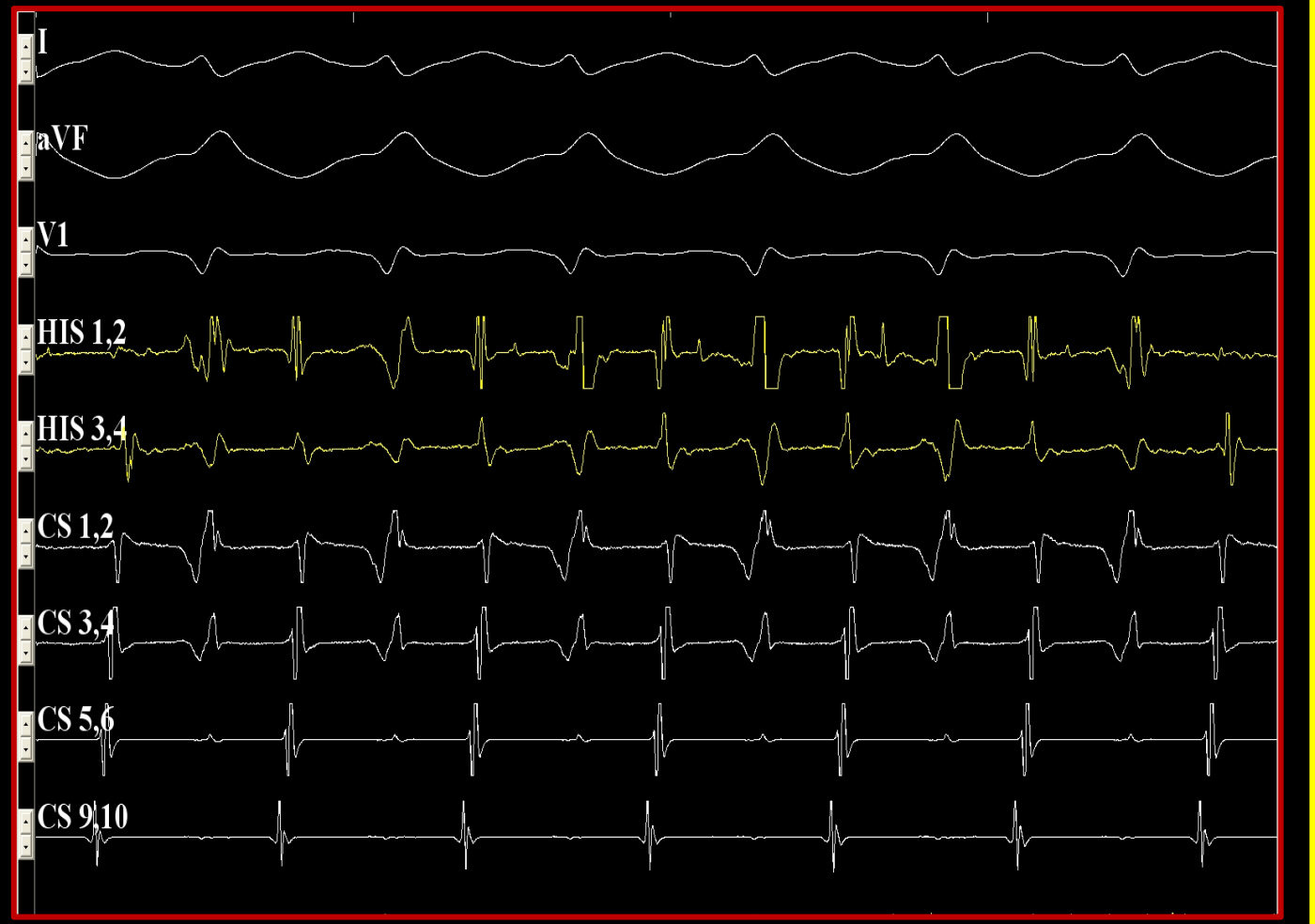



↓ aVR
↓ V1
↓ V4
↓ aVL
↓ V2
↓ V5
Arrhythmia Heart Failure Academy, The MMM
↓ aVF
↓ V3
↓ V6
13y/F 21/05/2018 @ 10.38

# Tachycardia 1

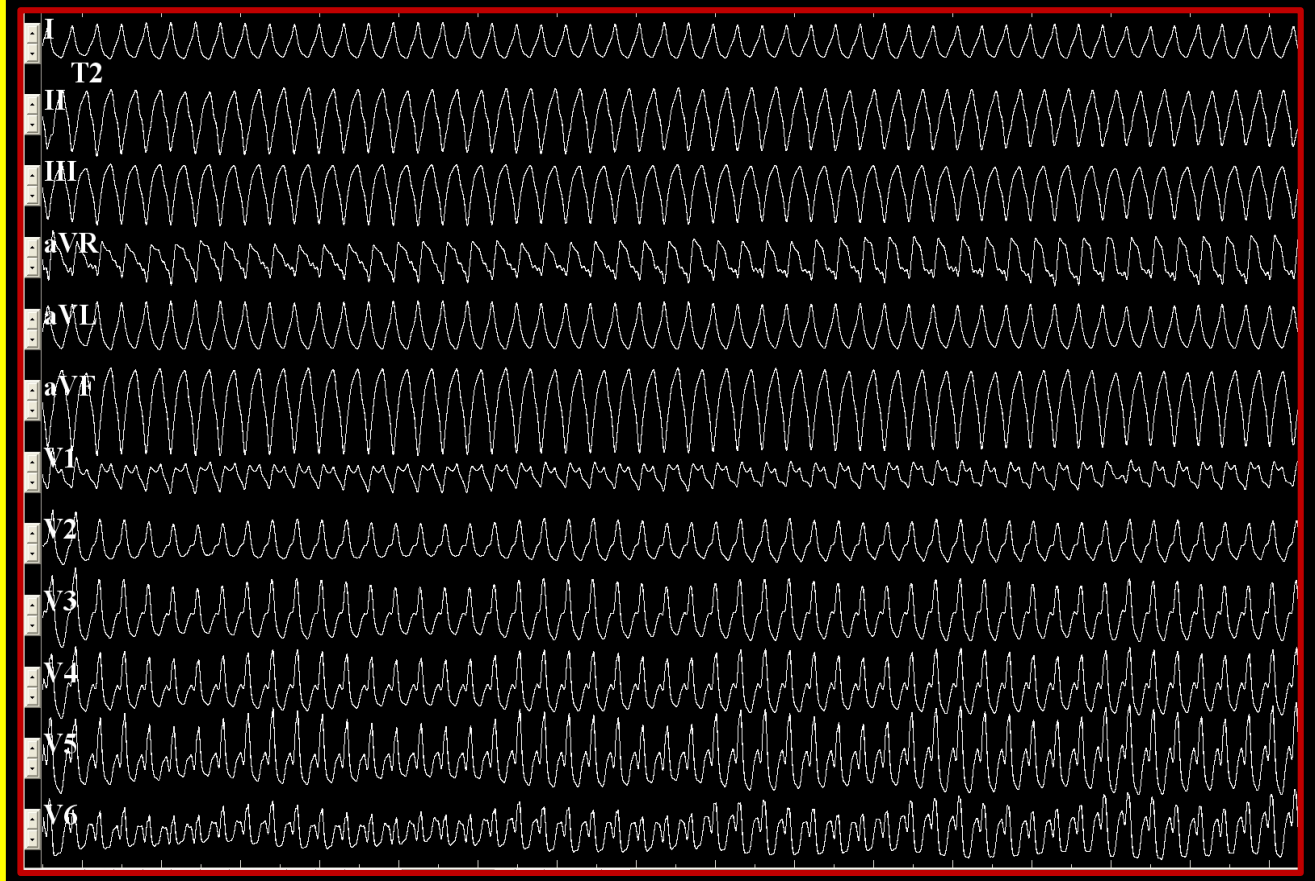
## Orthodromic tachycardia using right posteroseptal accessory pathway

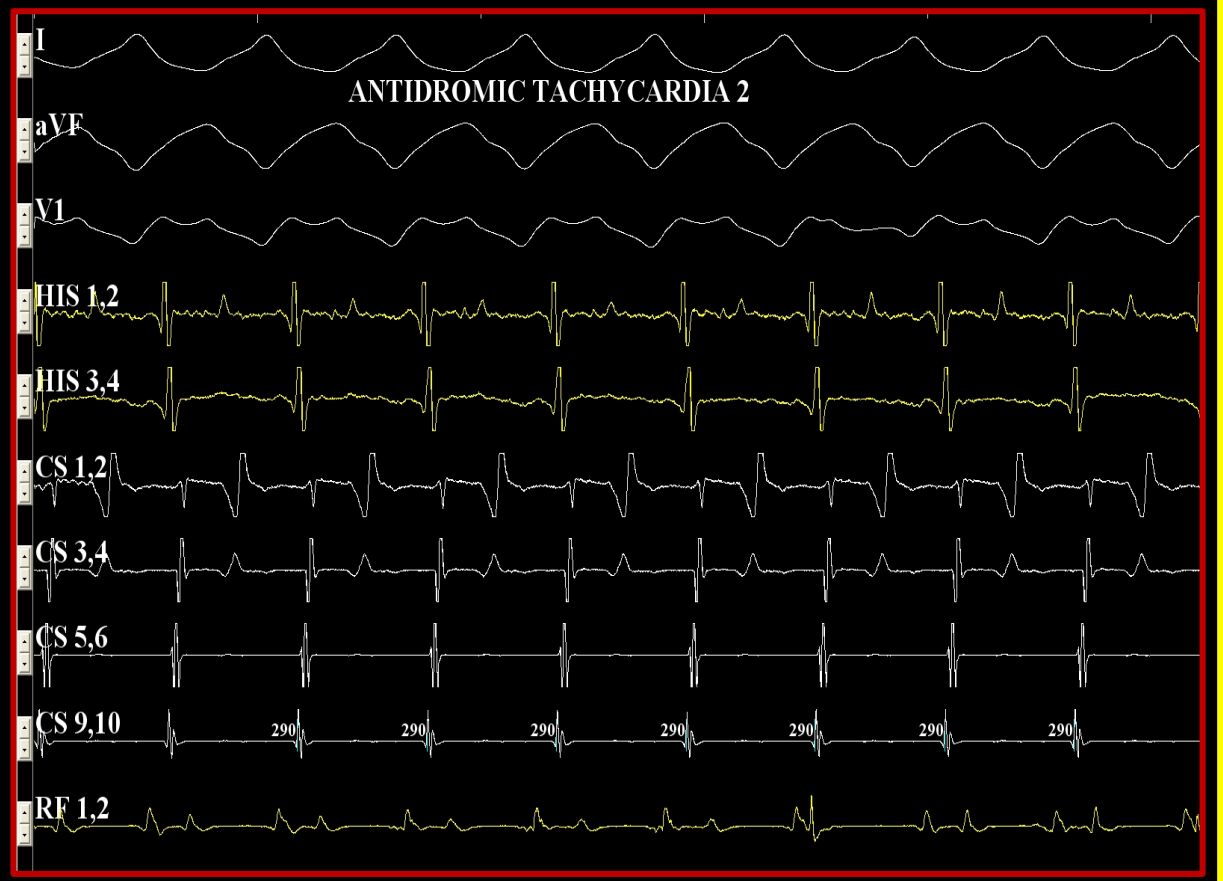


# Tachycardia 2

## Antidromic tachycardia using right posteroseptal accessory pathway

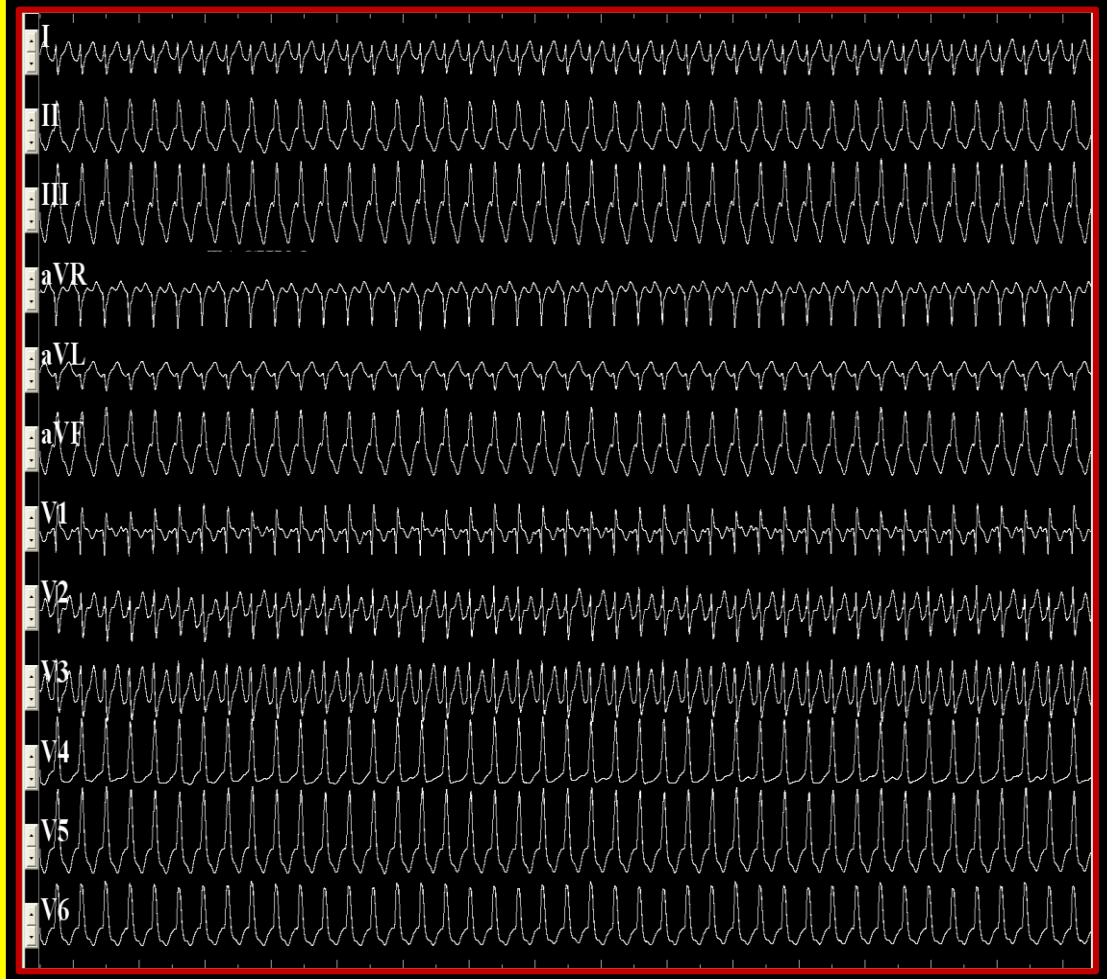


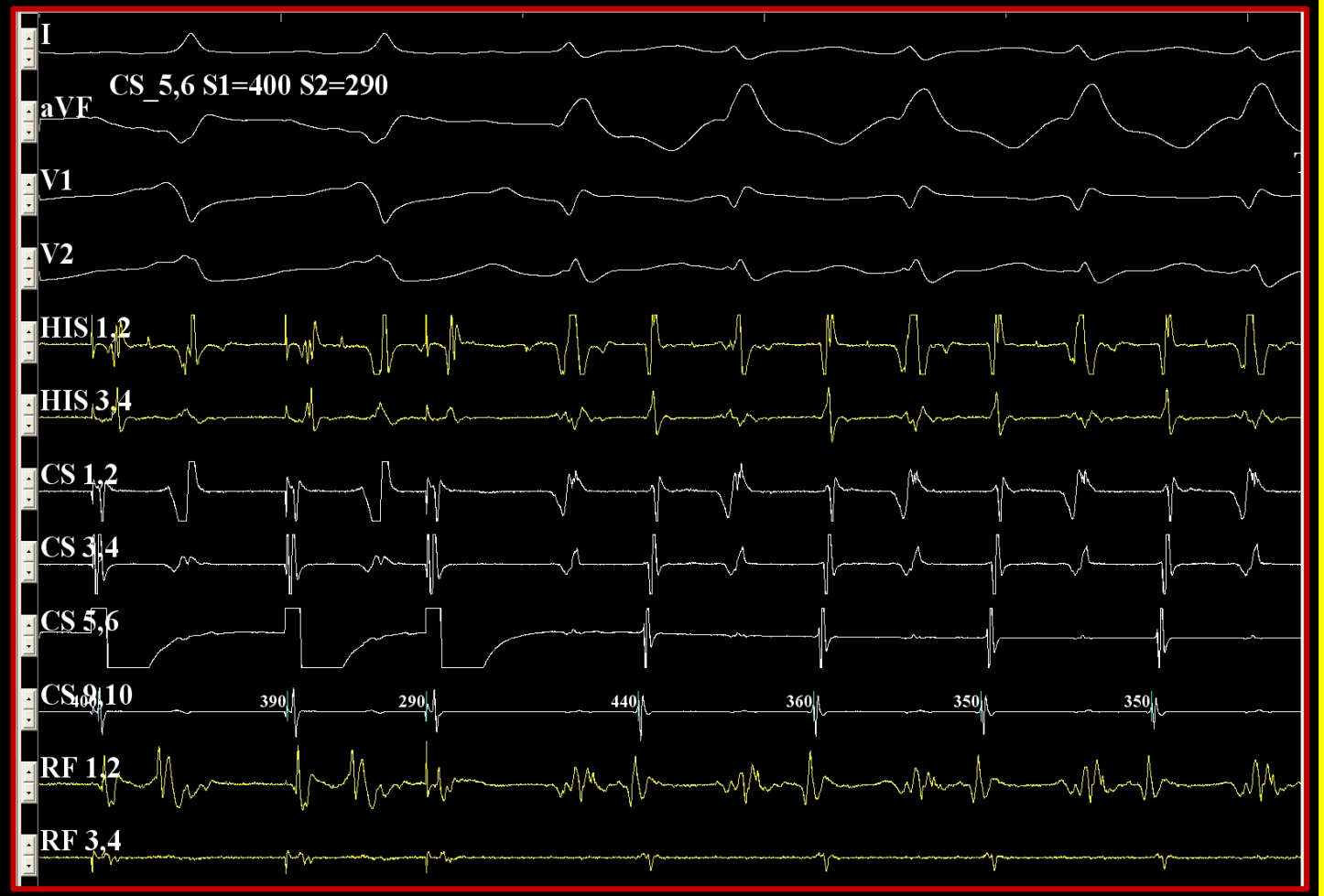




Post RPS ablation

# Tachycardia 3

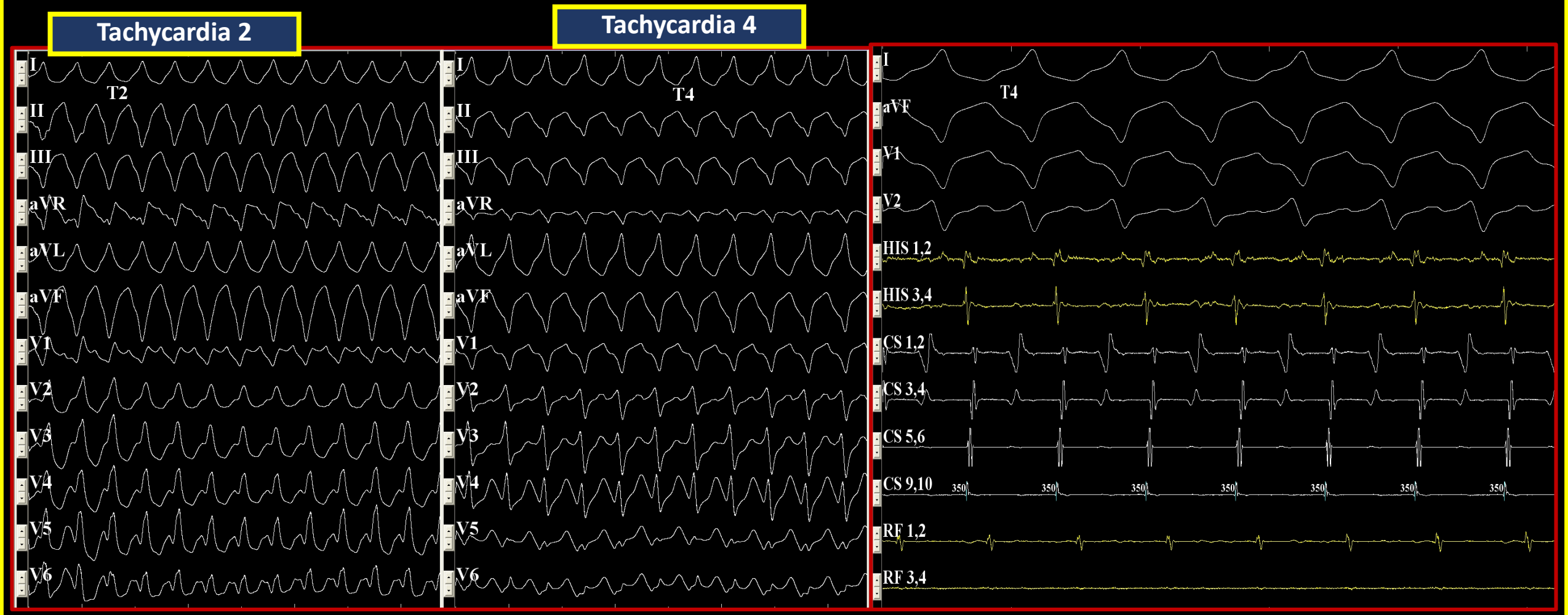
## Orthodromic Tachycardia using right posterolateral Accessory Pathway

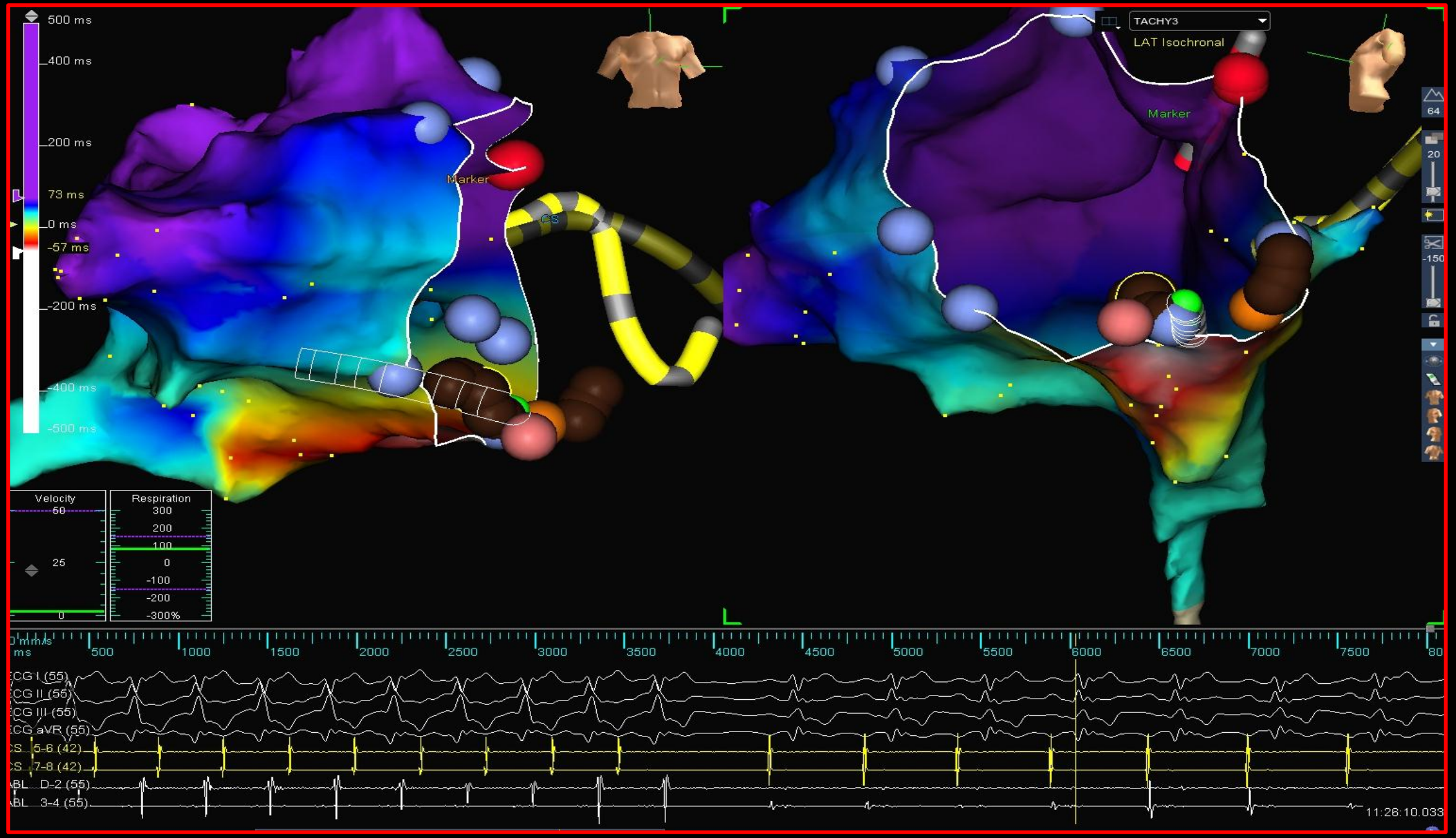


# Tachycardia 4

## Antidromic tachycardia using right posterolateral accessory pathway




500 ms
400 ms
200 ms
73 ms
0 ms
-57 ms
-200 ms
-400 ms
-500 ms
Marker
CS
TACHY3
LAT Isochronal
Marker
64
20
-150
Velocity
50
25
0
Respiration
300
200
100
0
-100
-200
-300%
mm/s
ms
500
1000
1500
2000
2500
3000
3500
4000
4500
5000
5500
6000
6500
7000
7500
CG I (55)
CG II (55)
CG III (55)
CG aVR (55)
CS 5-6 (42)
CS 7-8 (42)
ABL D-2 (55)
ABL 3-4 (55)
11:26:10.033

# MAHAIM TACHYCARDIA

12Y, M, C/O Palpitation

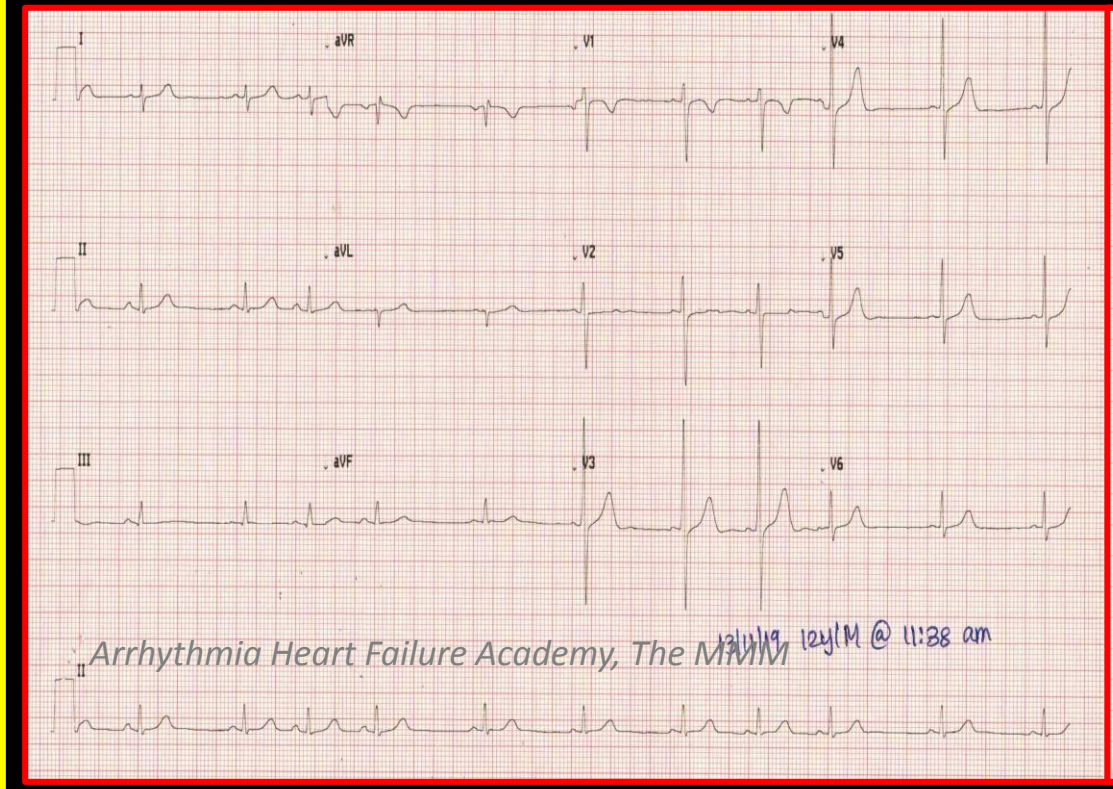
Documented wide QRS tachycardia

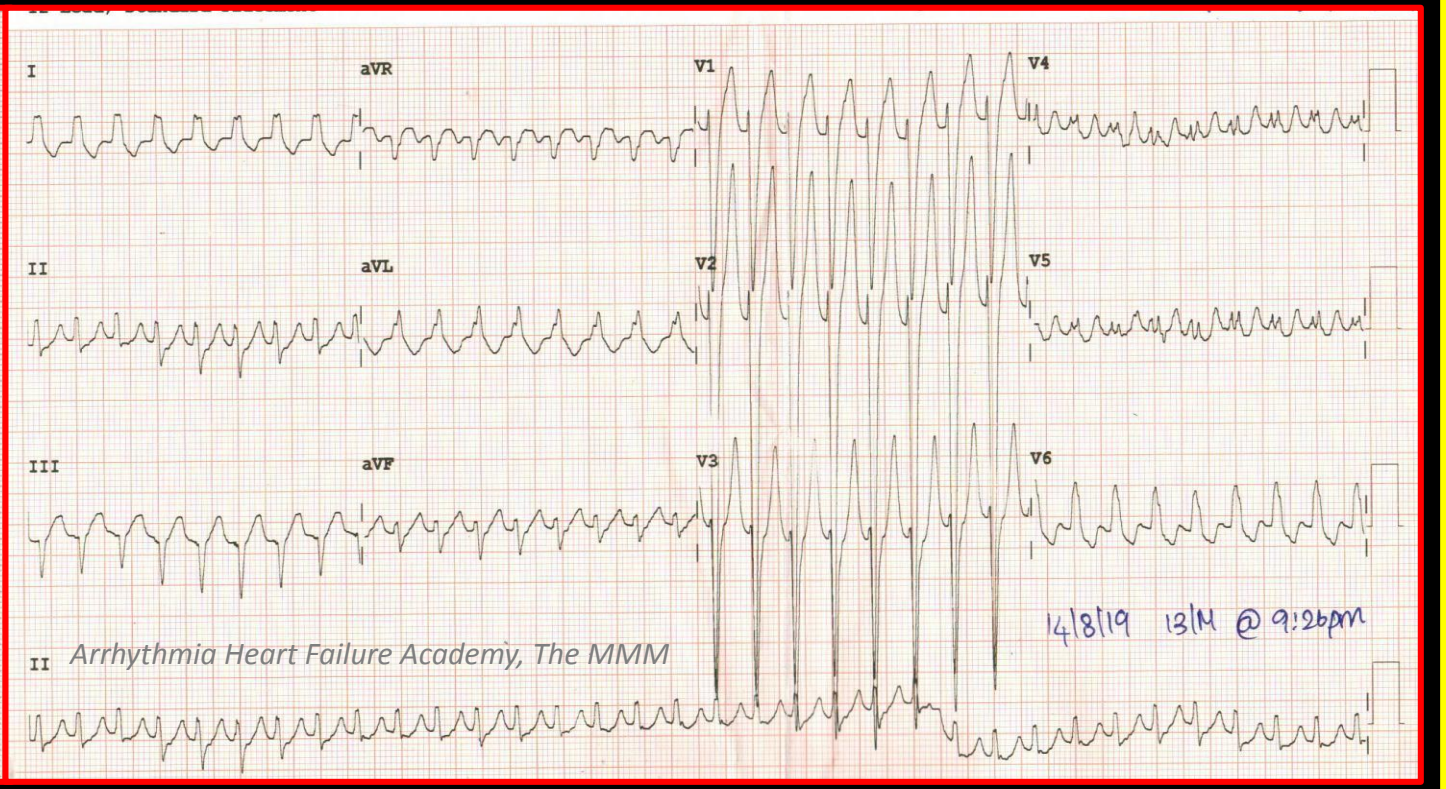
Structurally normal heart

Good biventricular function

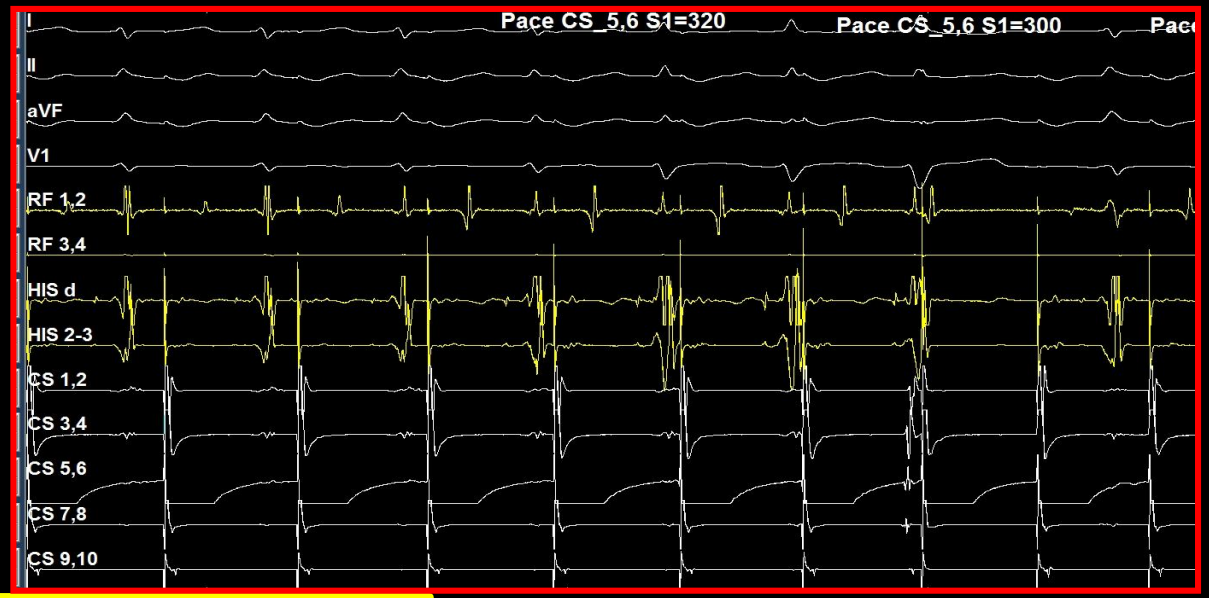
H/O Ablation for AVNRT with LBBB

# ECG

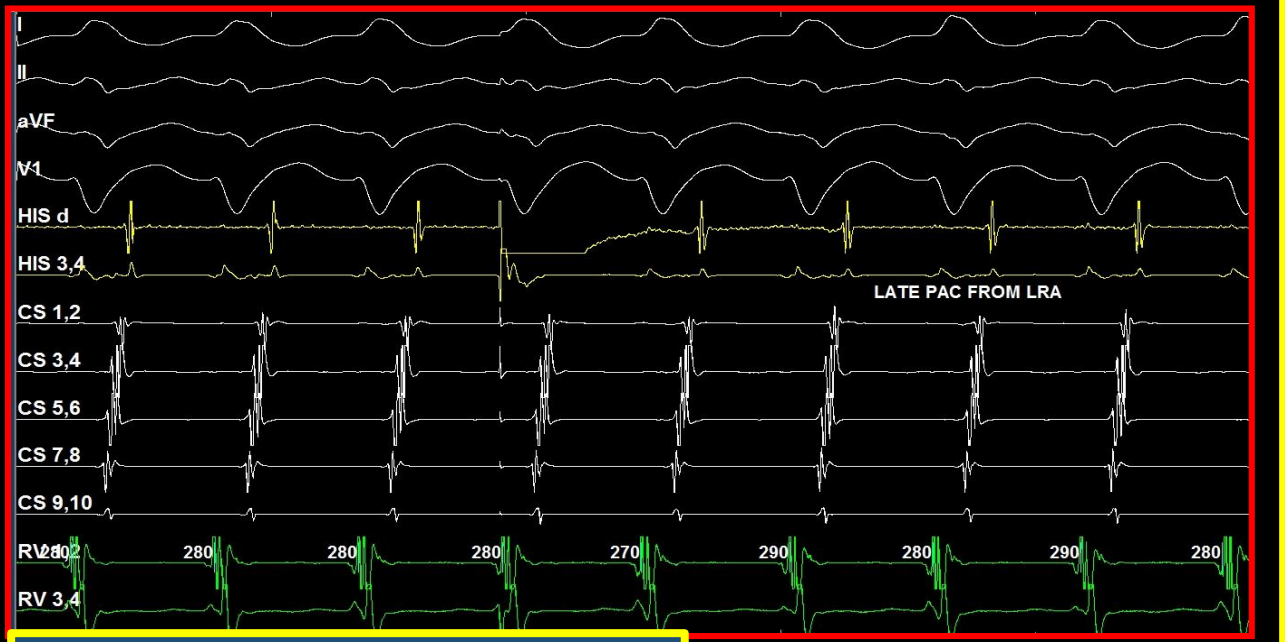

I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
II
Arrhythmia Heart Failure Academy, The MMM
12y/M @ 11:38 am


I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
II
Arrhythmia Heart Failure Academy, The MMM
4/8/19 13/M @ 9:26pm

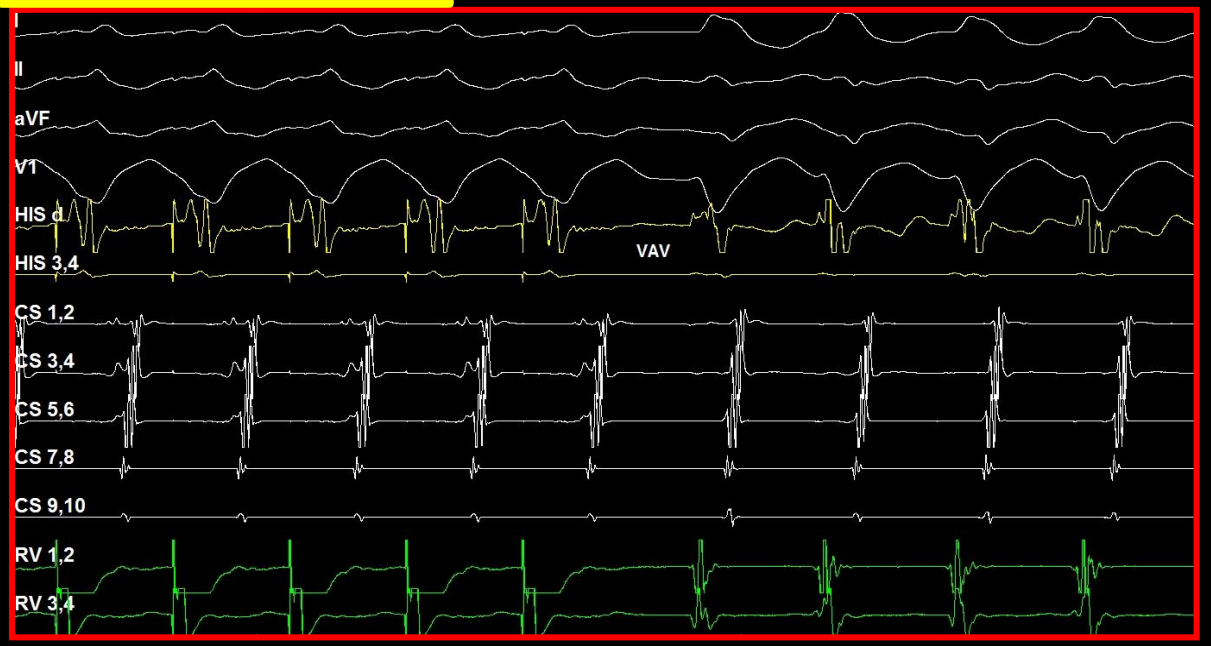
## Atrial pacing



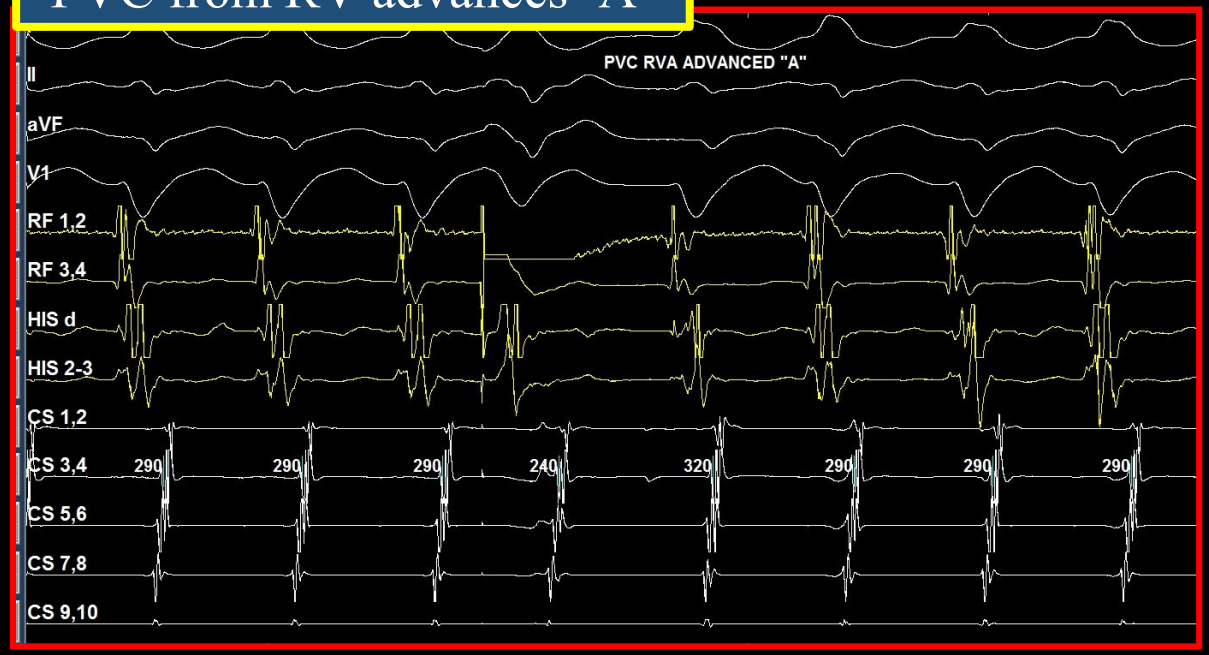

## Late PAC



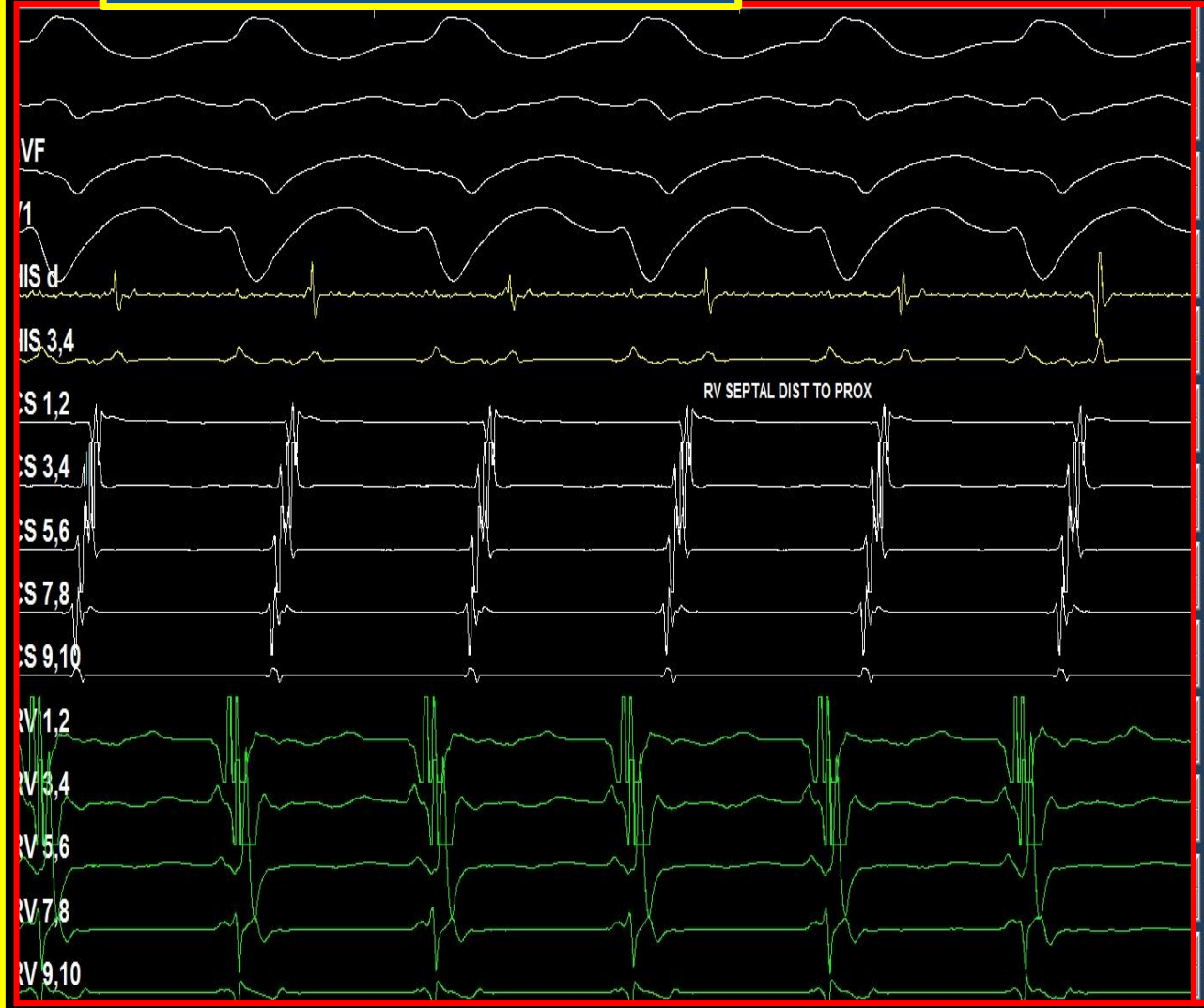

## VAV Response



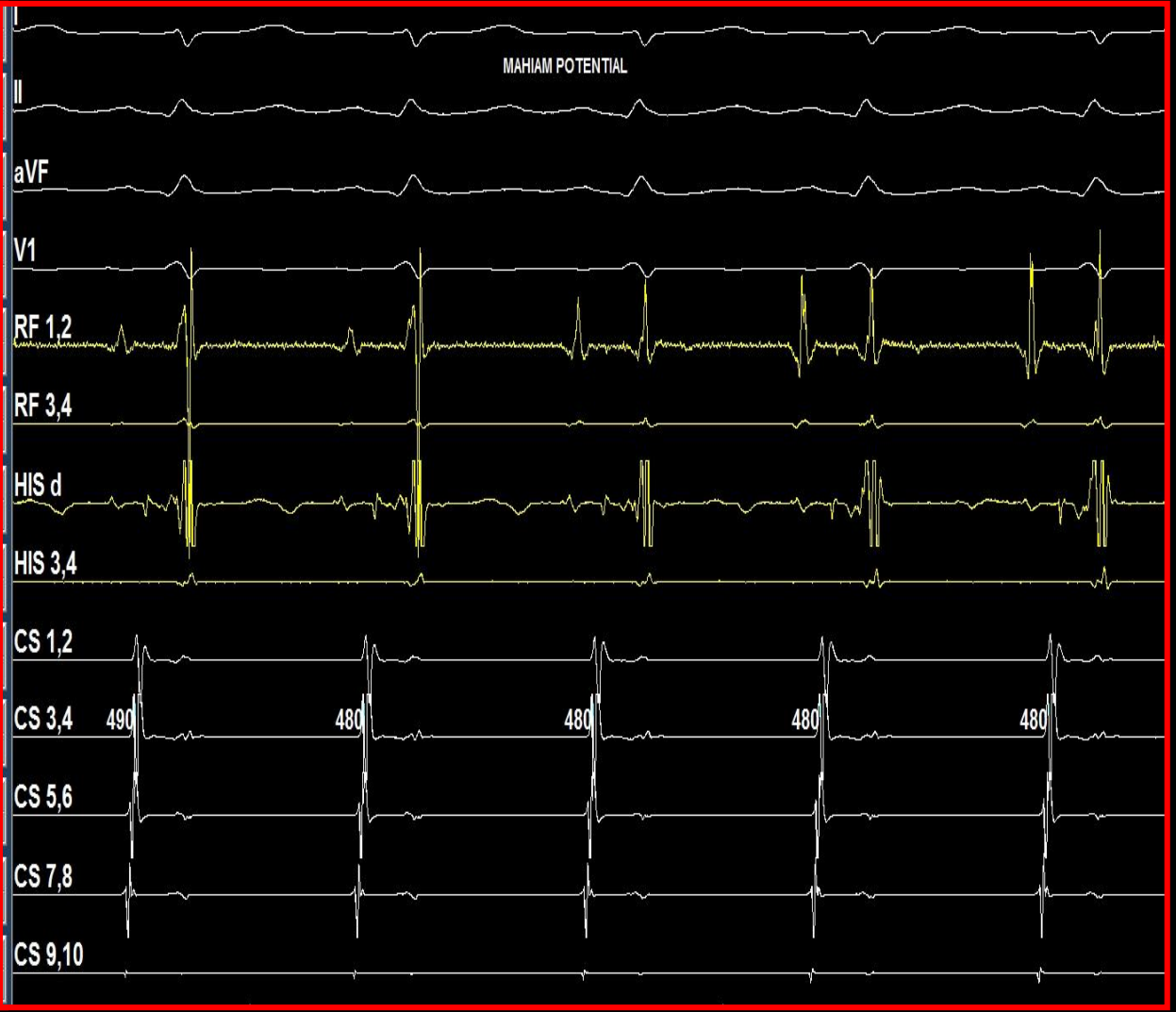

## PVC from RV advances ‘A’

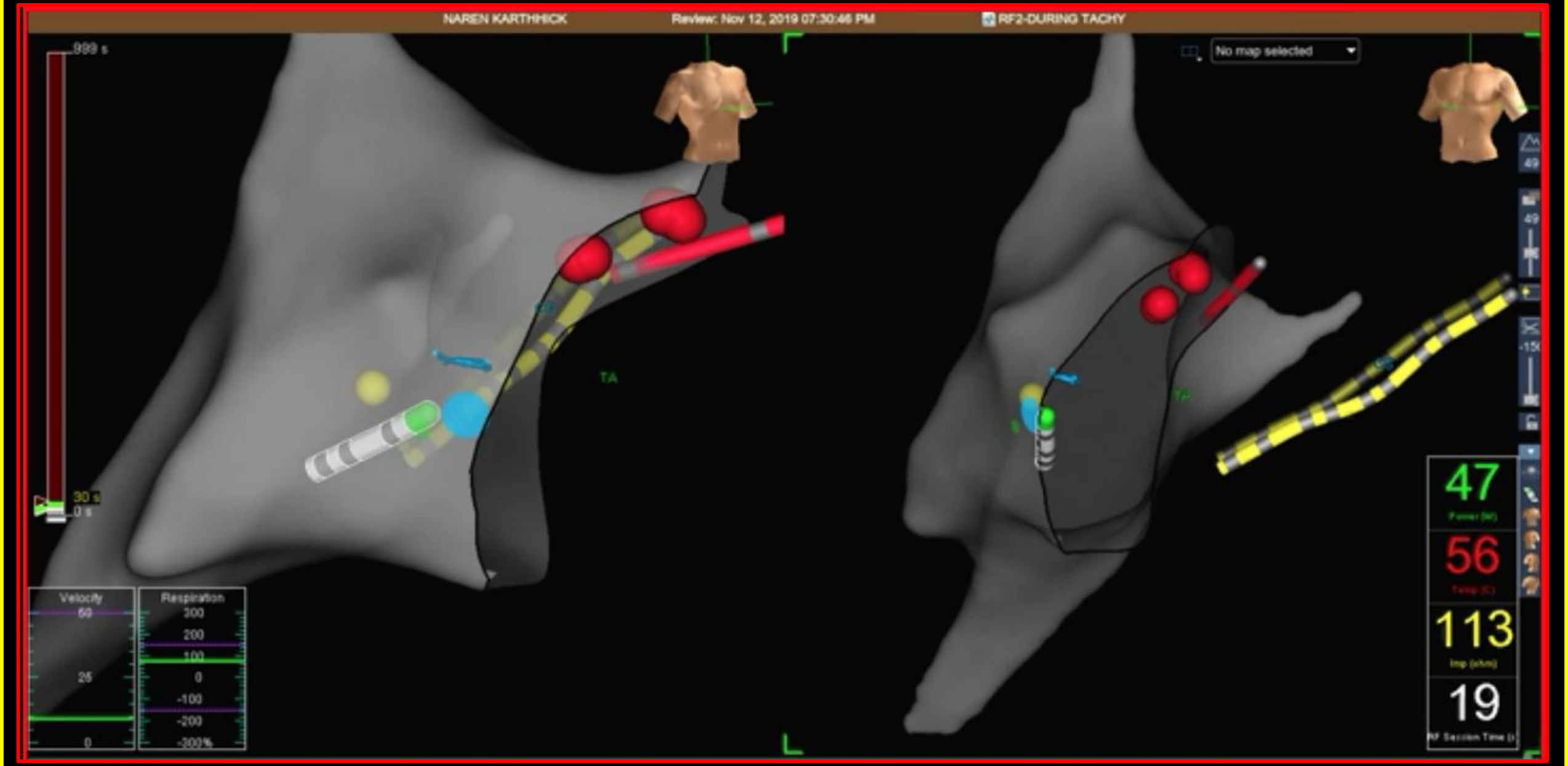


RV septal distal to proximal




Mahaim potential




NAREN KARTHIKICK
Review: Nov 12, 2019 07:30:46 PM
RF2-DURING TACHY
No map selected
999 s
30 s
0 s
TA
TA
Velocity
60
25
0
Respiration
300
200
100
0
-100
-200
-300%
47
56
113
19

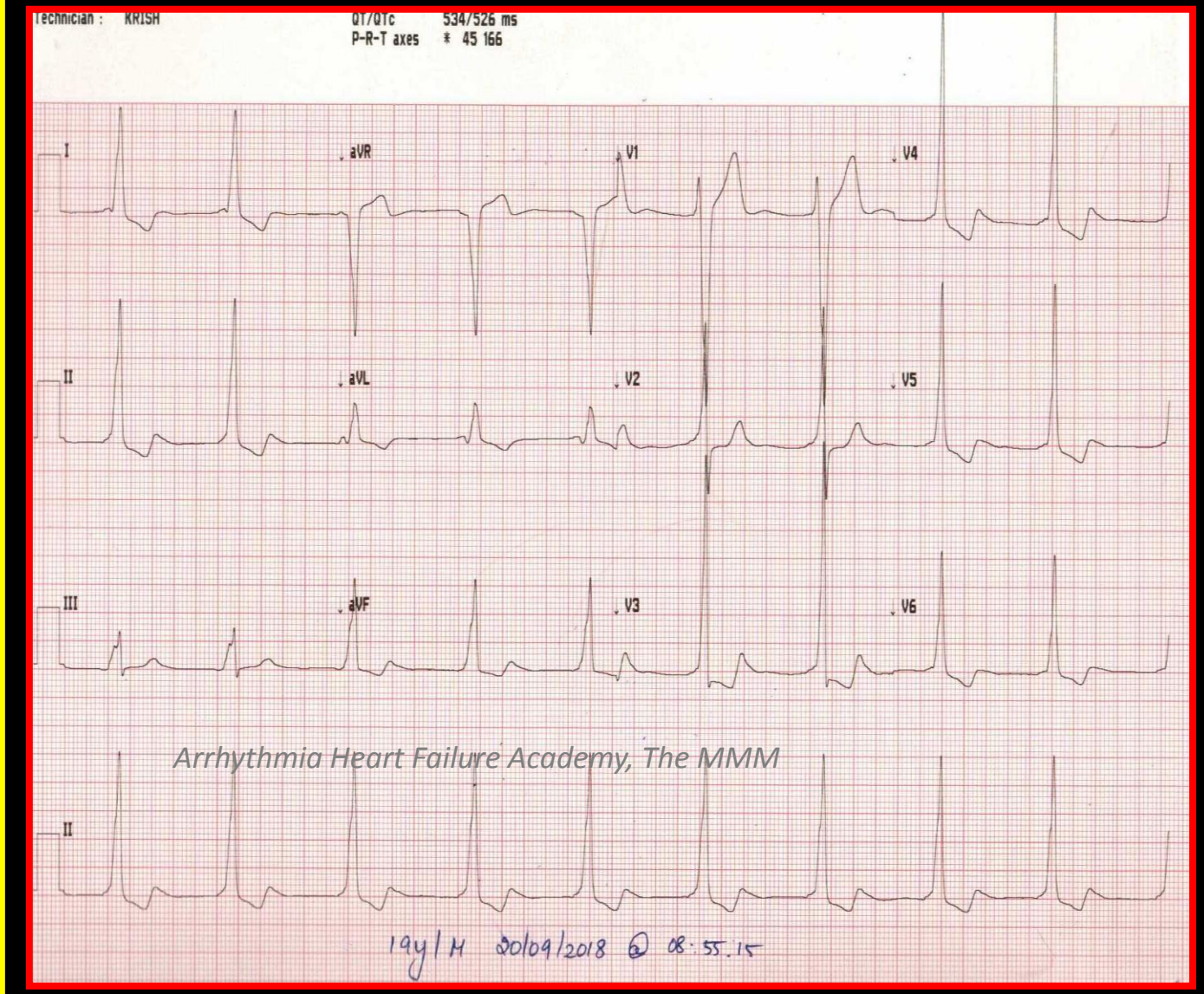
# RAA TO RVOT AP CONNECTION

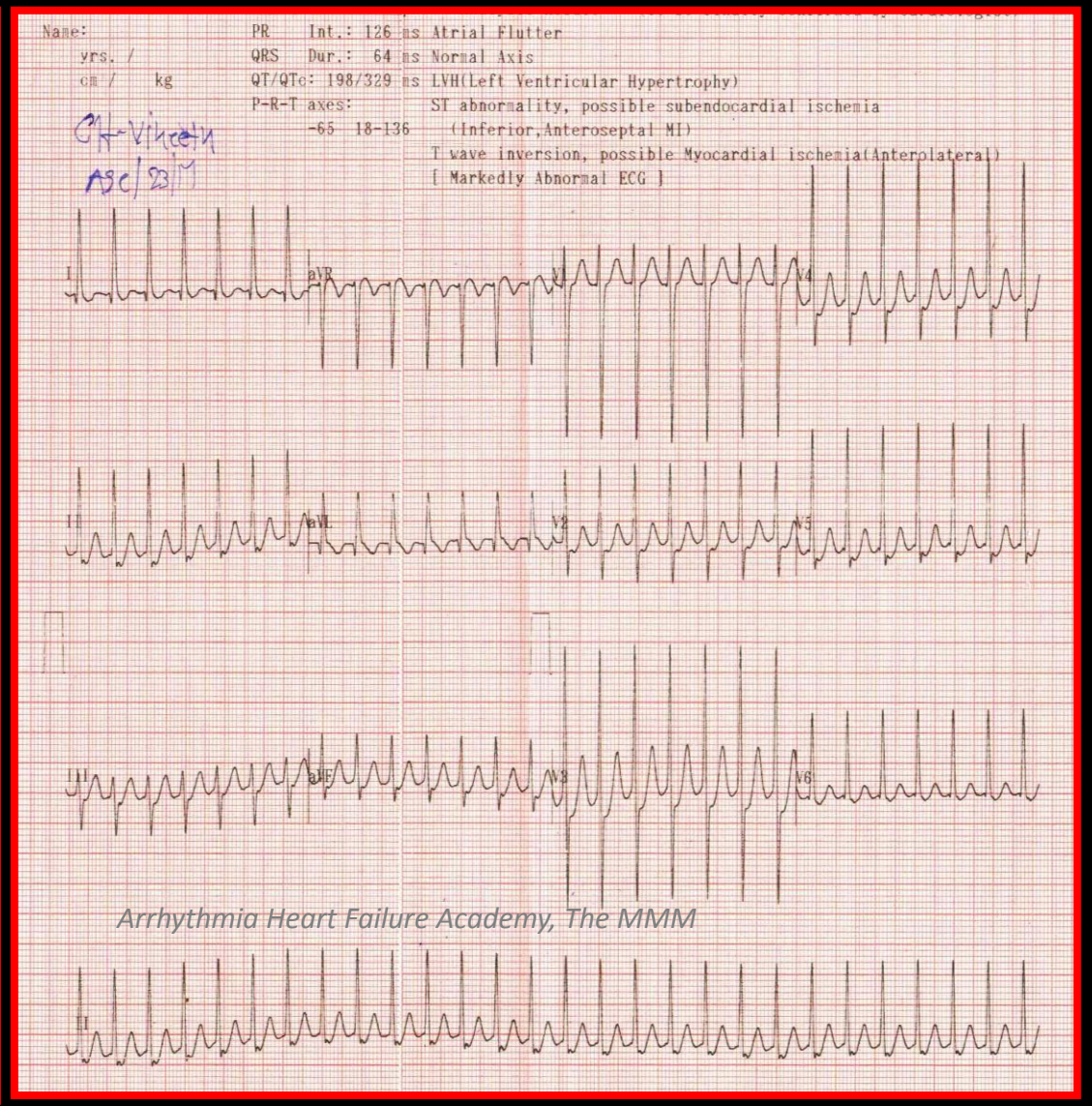
19Y, M, C/O palpitations on and off x 12 years

Attempted RFA for accessory pathway 1 year back

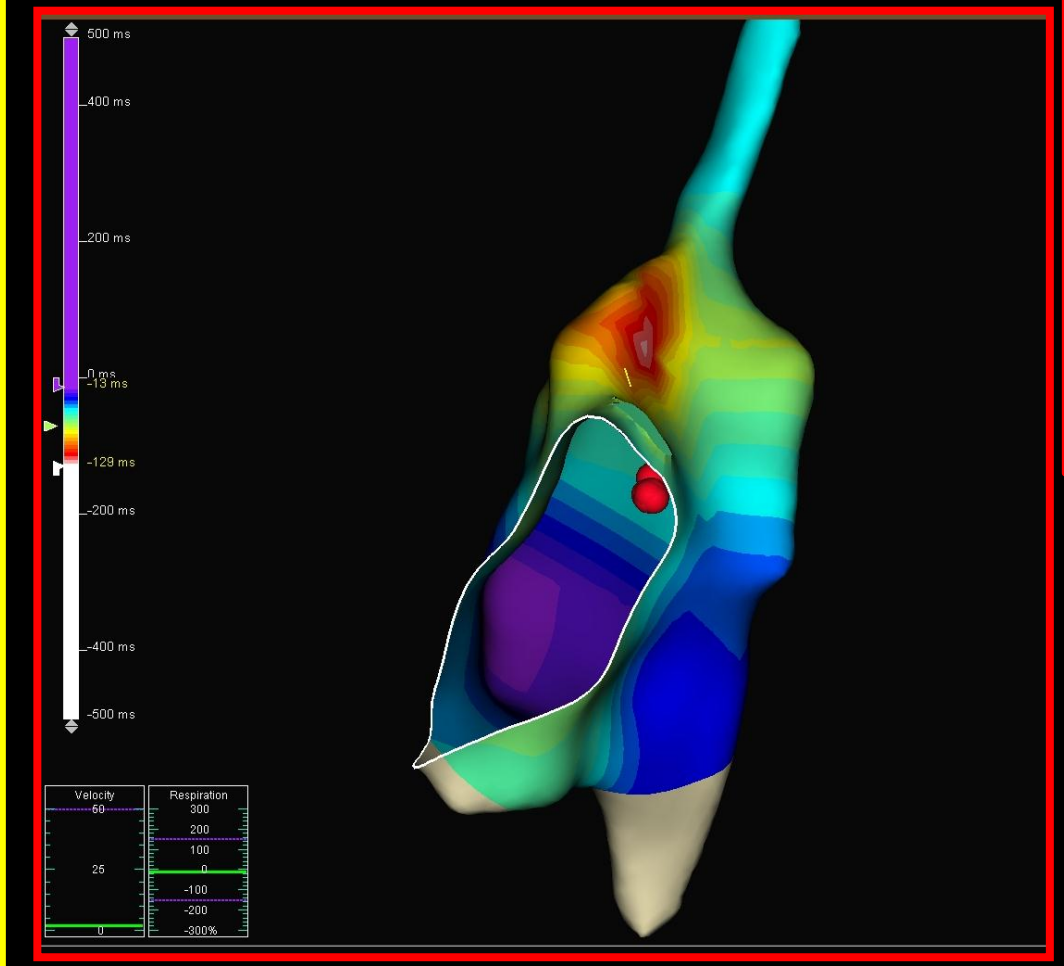
Echo-Normal study

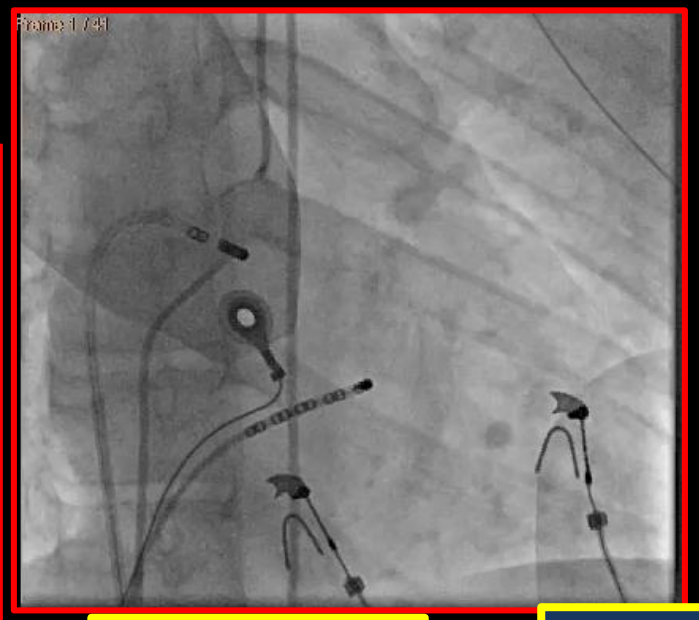
# ECG

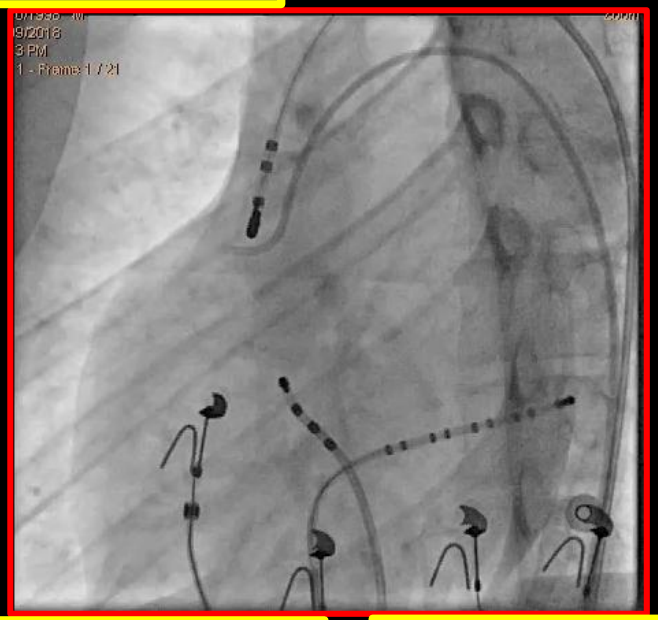

Technician : KRISH
QT/QTc 534/526 ms
P-R-T axes * 45 166
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
II
Arrhythmia Heart Failure Academy, The MMM
19y/M 20/09/2018 08:55:15


Name:
yrs. /
cm / kg
PR Int.: 126 ms Atrial Flutter
QRS Dur.: 64 ms Normal Axis
QT/QTc: 198/329 ms LVH(Left Ventricular Hypertrophy)
P-R-T axes: ST abnormality, possible subendocardial ischemia
-65 18-136 (Inferior,Anteroseptal MI)
T wave inversion, possible Myocardial ischemia(Anterolateral)
[ Markedly Abnormal ECG ]
Arrhythmia Heart Failure Academy, The MMM

# Coronary angiogram



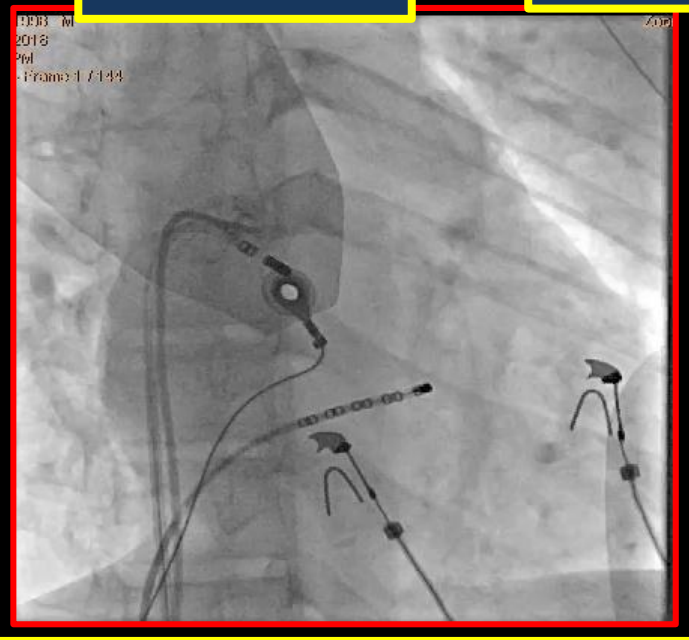



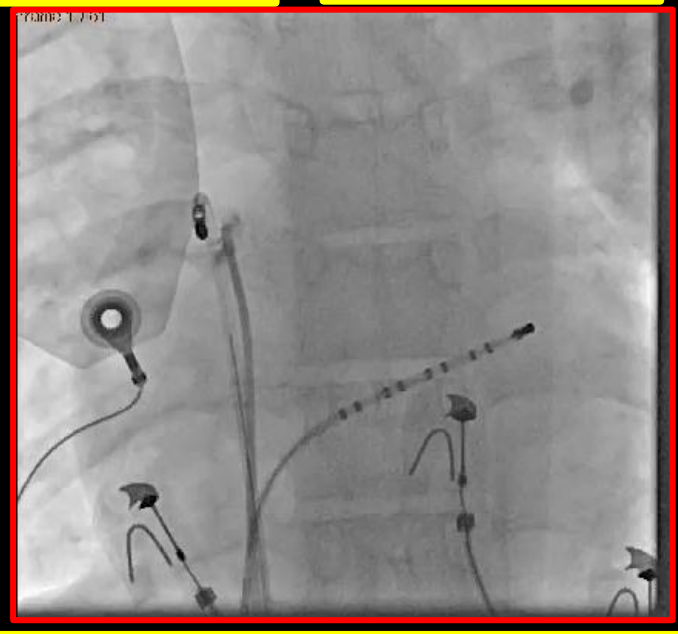


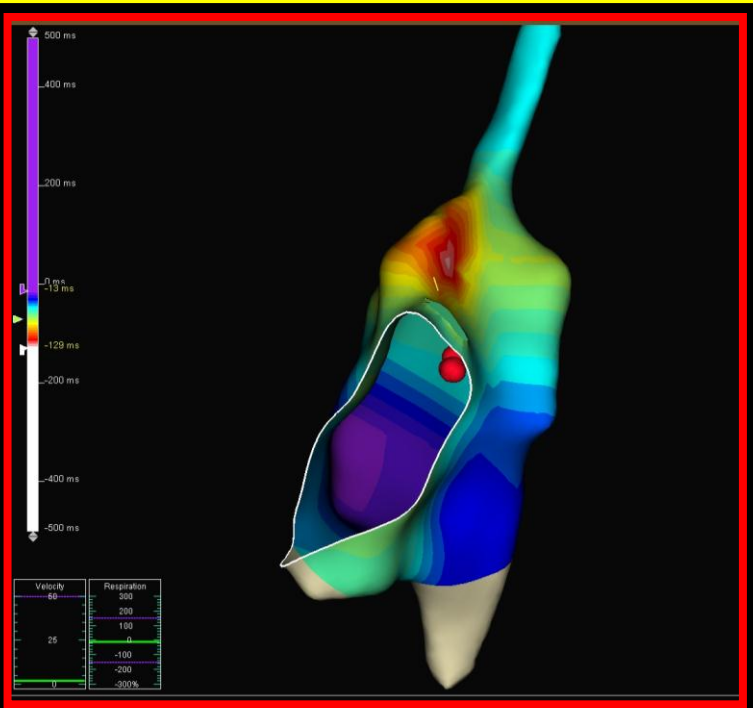
RAO view

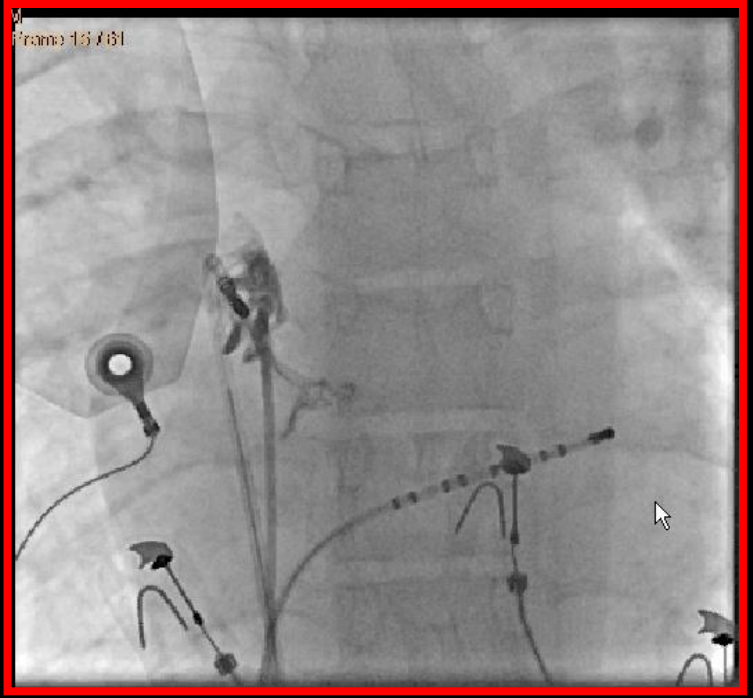
RAA angiogram

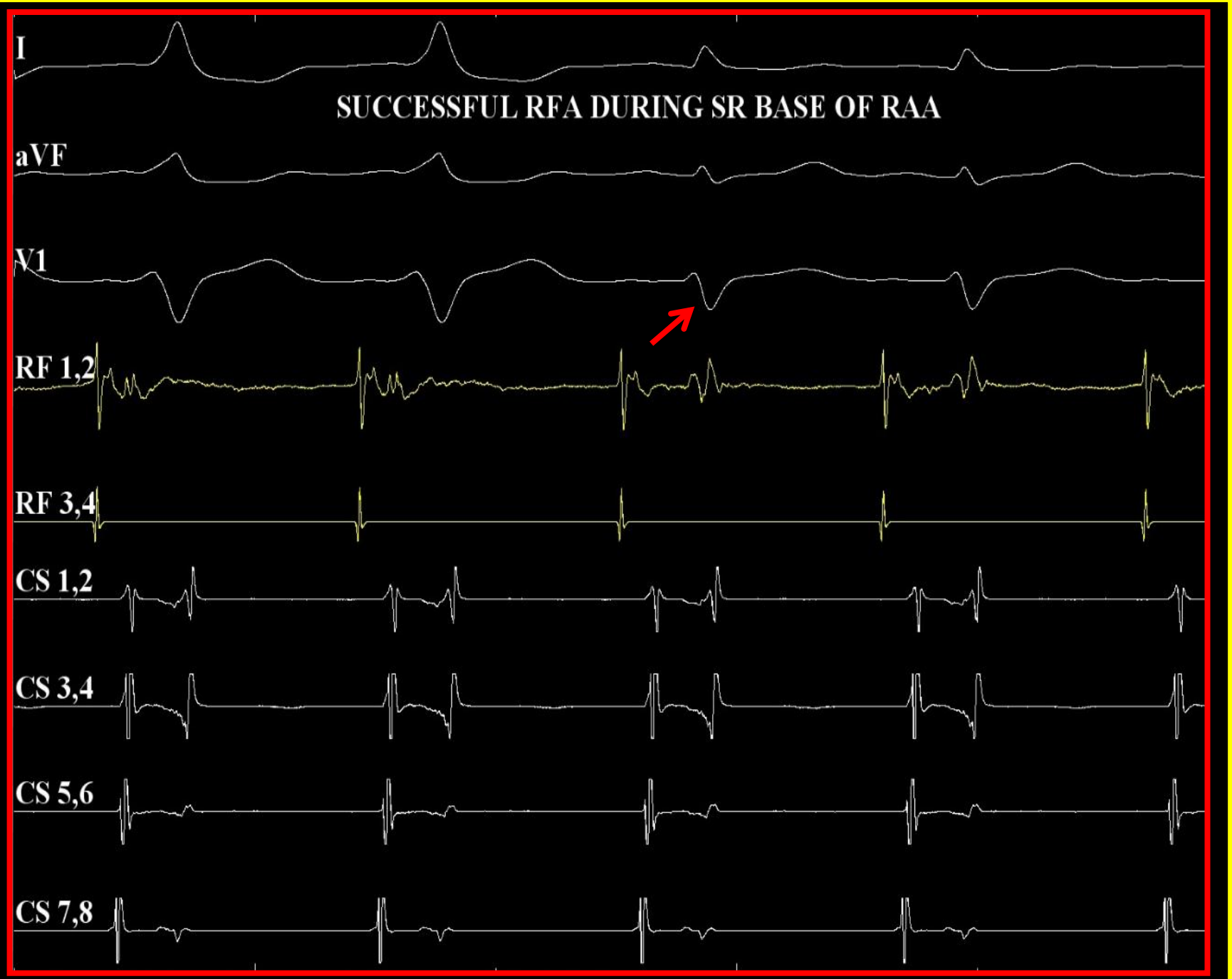
LAO view






500 ms
400 ms
200 ms
0 ms
-13 ms
-129 ms
-200 ms
-400 ms
-500 ms
Velocity
Respiration




I
SUCCESSFUL RFA DURING SR BASE OF RAA
aVF
V1
RF 1,2
RF 3,4
CS 1,2
CS 3,4
CS 5,6
CS 7,8

# AT

Unusual location (Appendage, His bundle)

**Around sinus node**

**Phrenic nerve, adjacent structure damage**

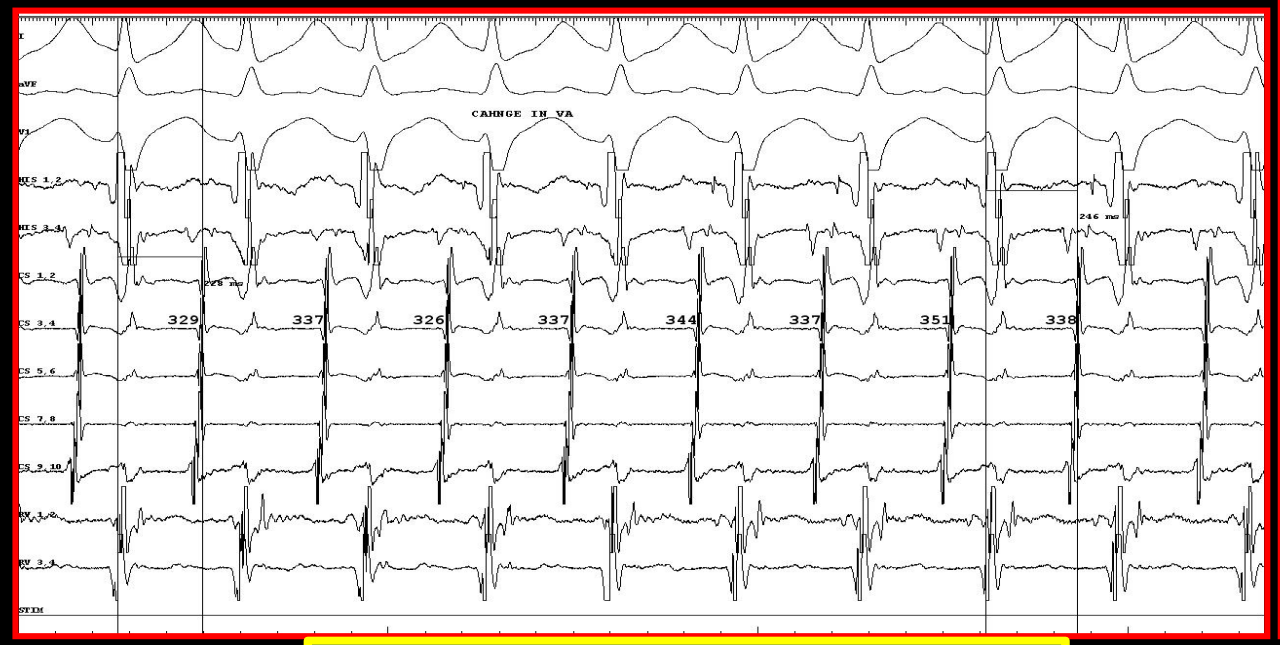
# H/O Abandoned ablation procedure
# Fear of phrenic nerve injury

33Y, M, Recurrent palpitaions X 5 years

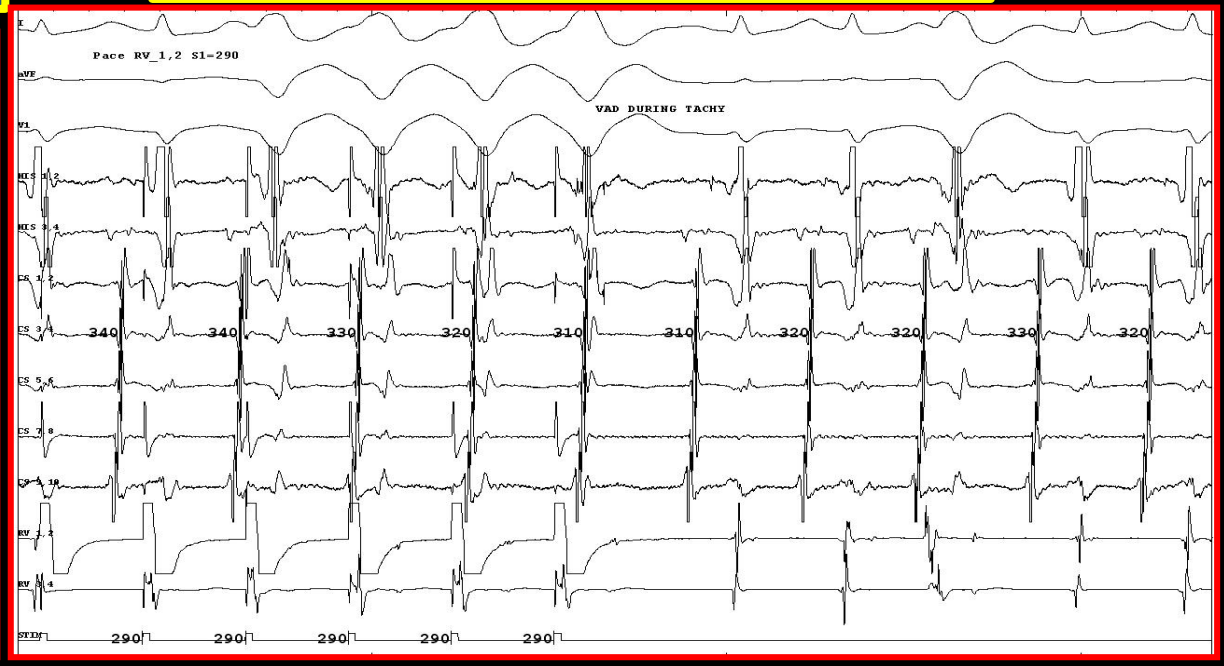
CVS exam : WNL

2 D Echo : WNL

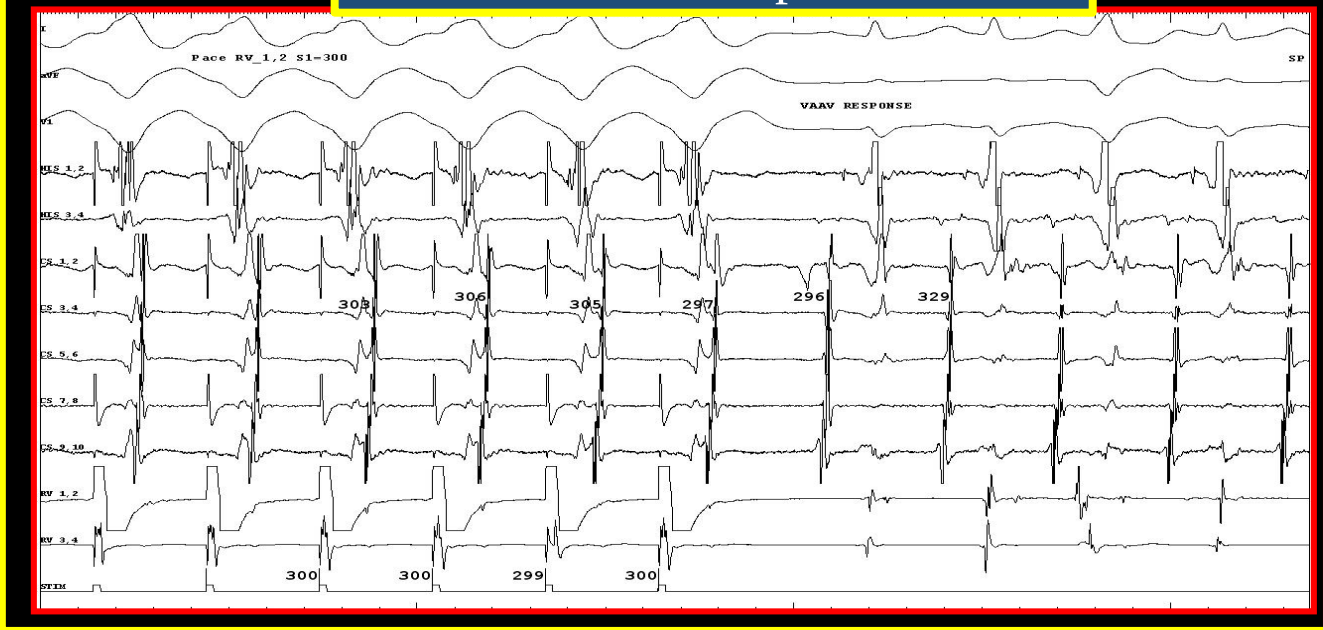
# Spontaneously changing VA interval – Atrial tachycardia



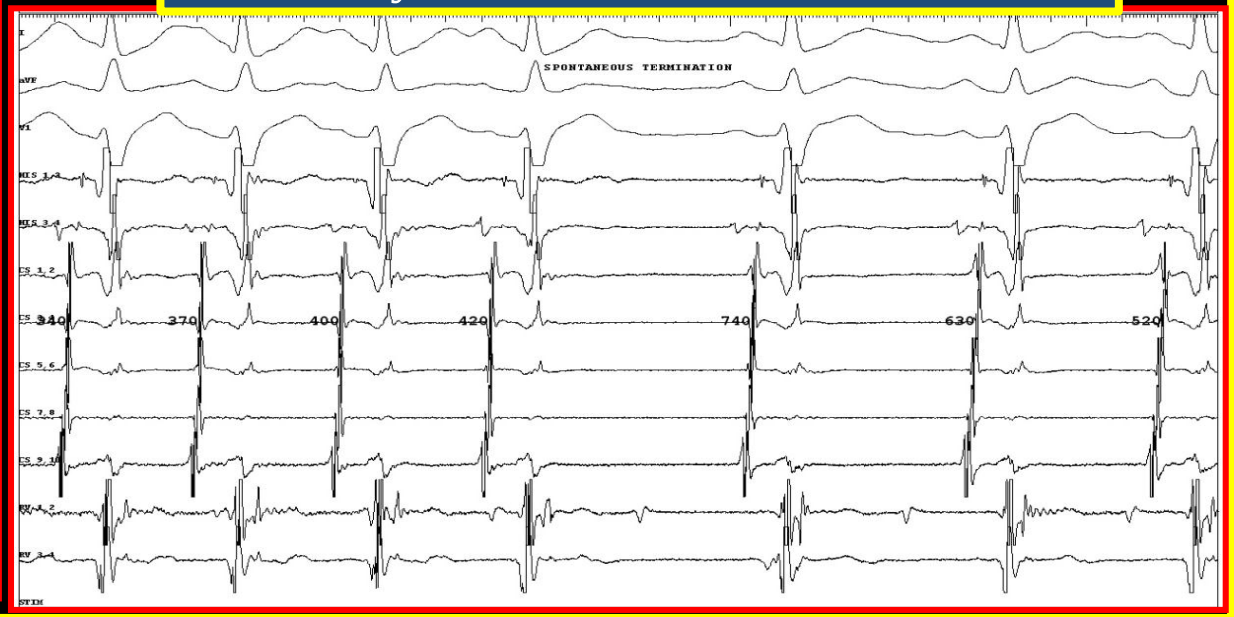

# VA dissociation during V pace



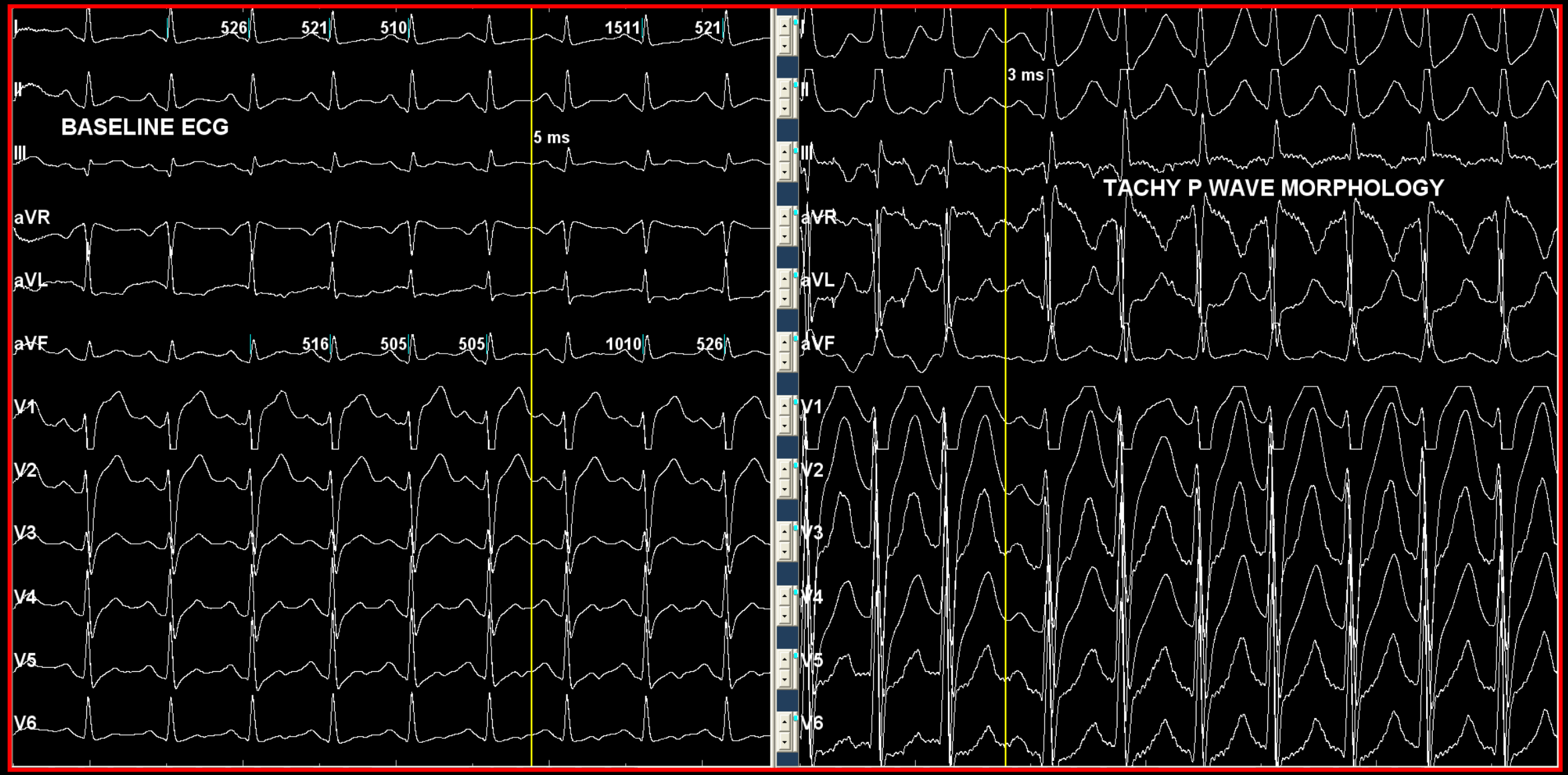

# VAAV Response



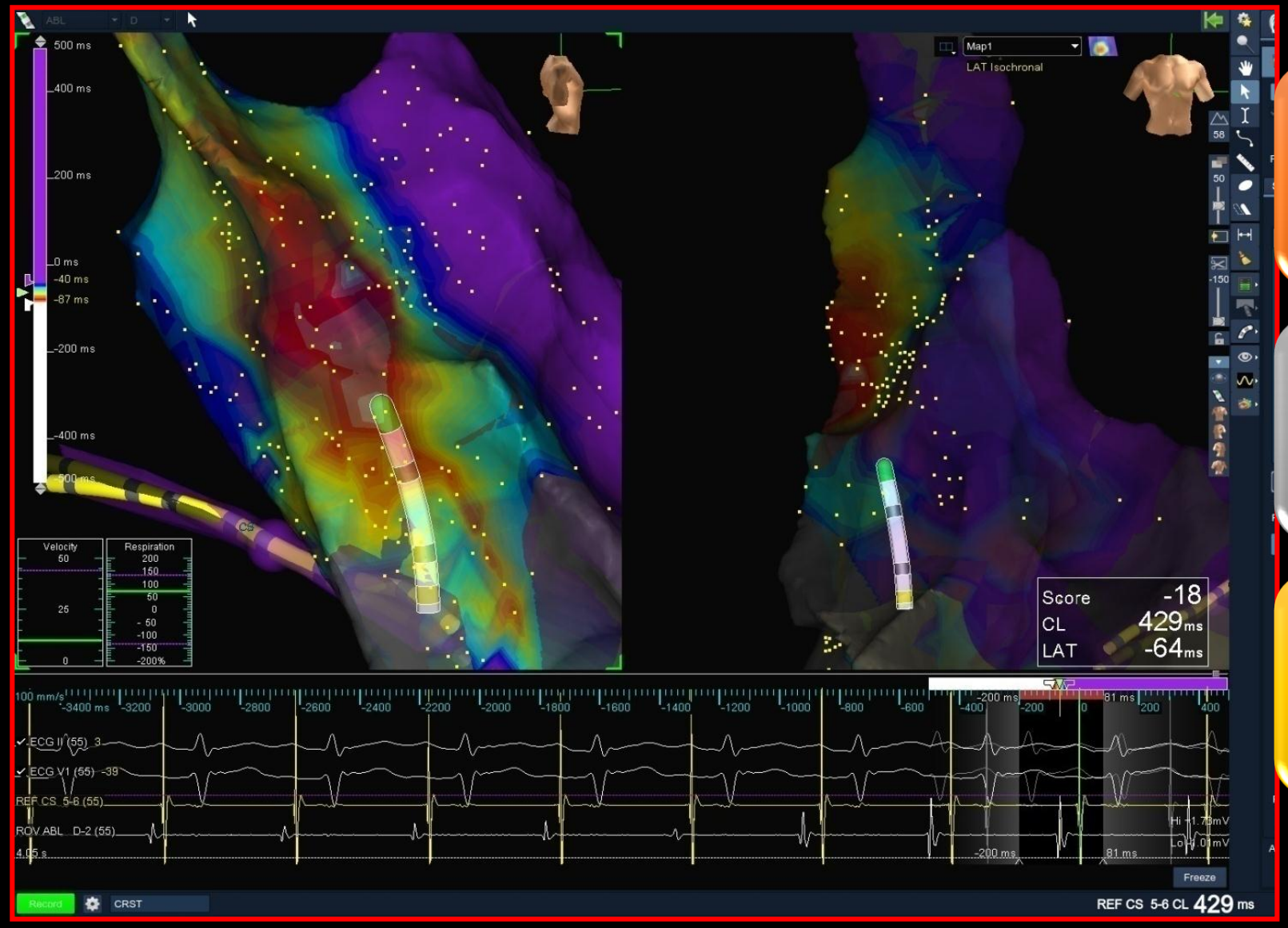

# "Tachy Termination with V" - AT



# Tachycardia P wave morphology



# Activation Map – focal AT at mid crista




Pacing from the “earliest site” at 7.0V captured phrenic nerve

Ablation was performed while pacing and confirming diaphragmatic contraction

30W, 50◦C, 15Sec

# Difficult to induce AVRT, concealed accessory pathway

28Y, M, Recurrent palpitation

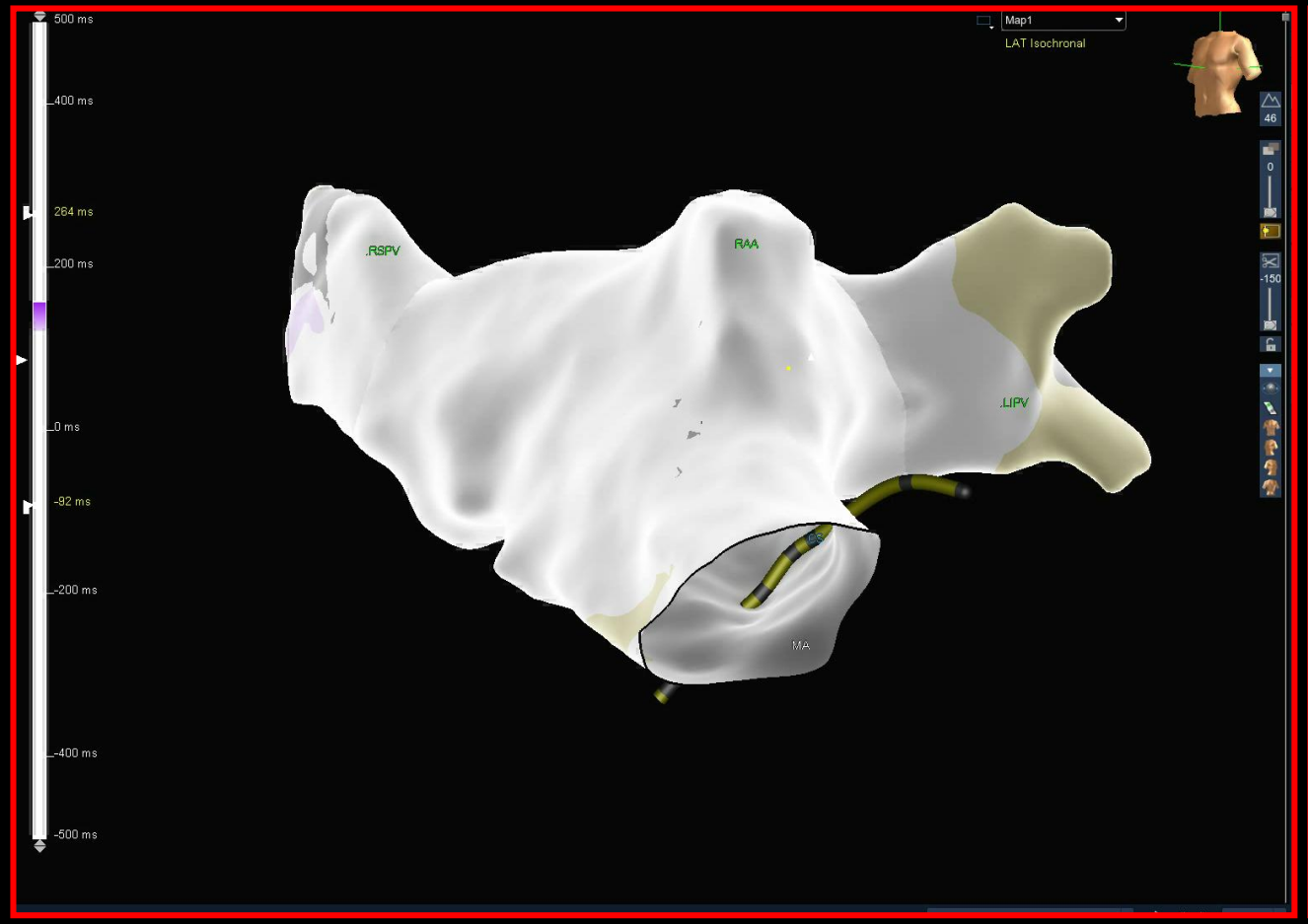
Attempted RFA elsewhere

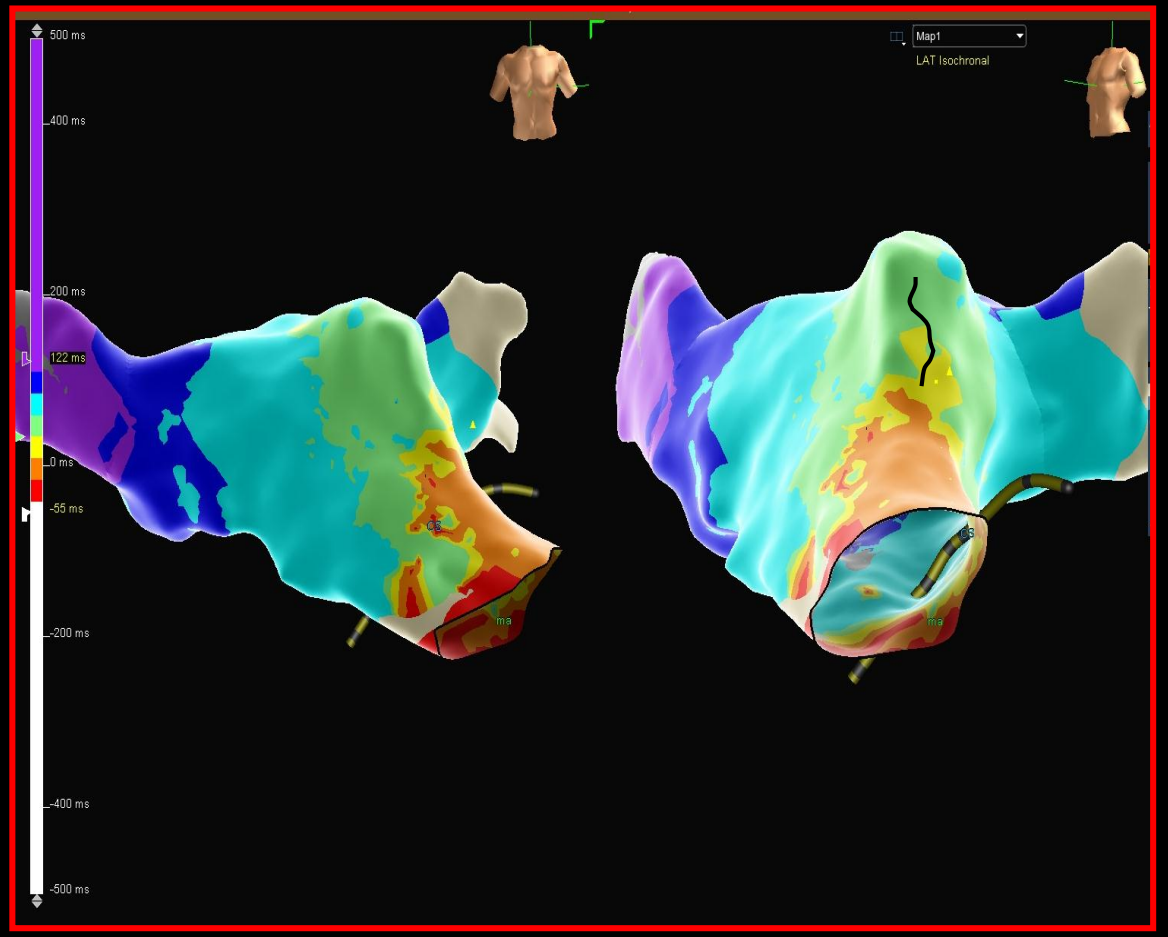
Regular narrow QRS tachycardia induced once

On isopril, Short Lasting,

Appeared to be AVRT- left pathway

Retrograde AP conduction was seen only during IV adenosine boluses




# Post ablation no retrograde pathway conduction on adenosine

11th ANNUAL CONFERENCE OF INDIAN HEART RHYTHM SOCIETY

# Thank you


Dr. Ulhas M. Pandurangi MD., DM

Chief – Cardiac Electrophysiology & Pacing

*Arrhythmia Heart Failure Academy*

The Madras Medical Mission

*Founder President: Tamilnadu Electrophysiology Council*

*President Elect: Indian Society of Electrocardiology*