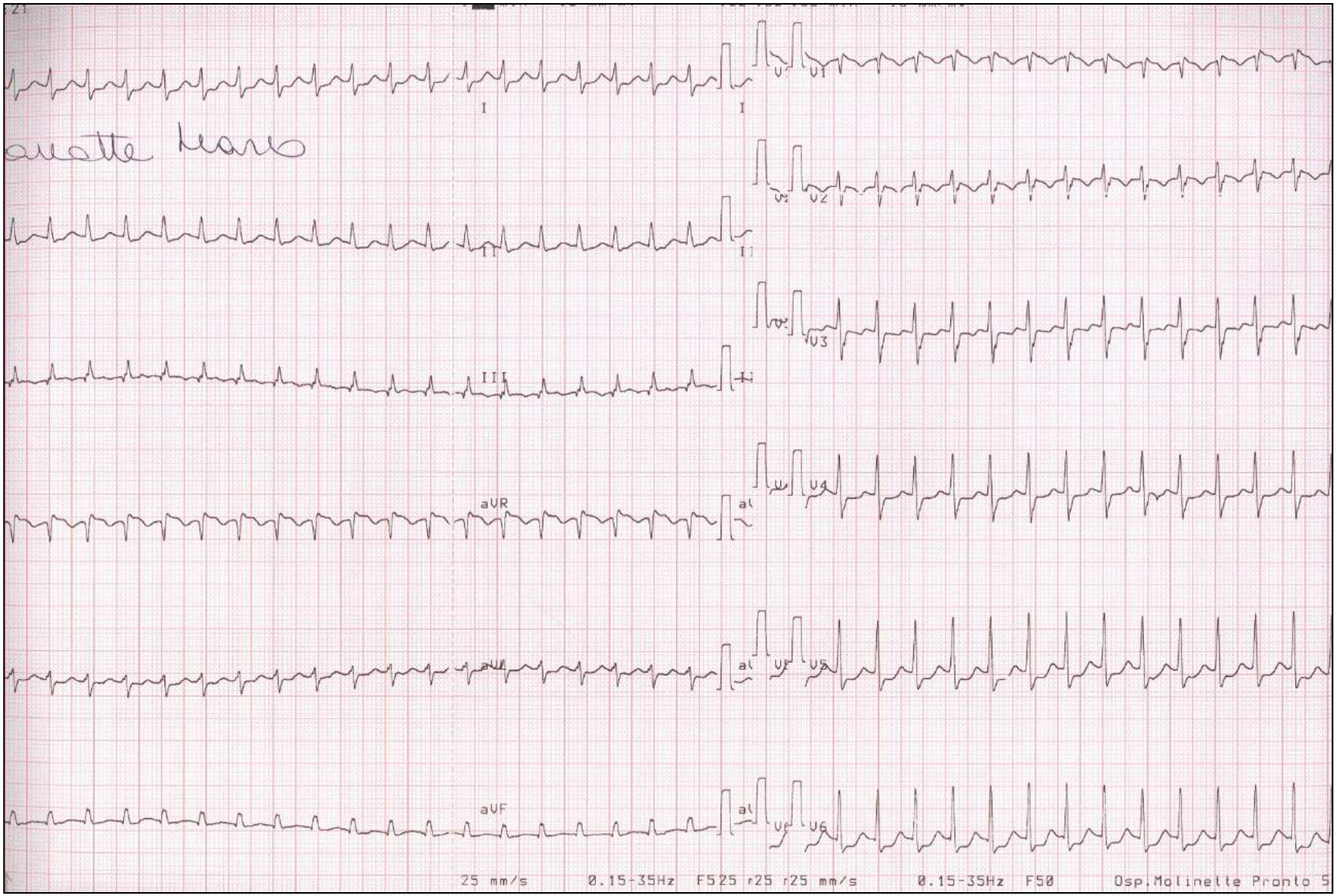
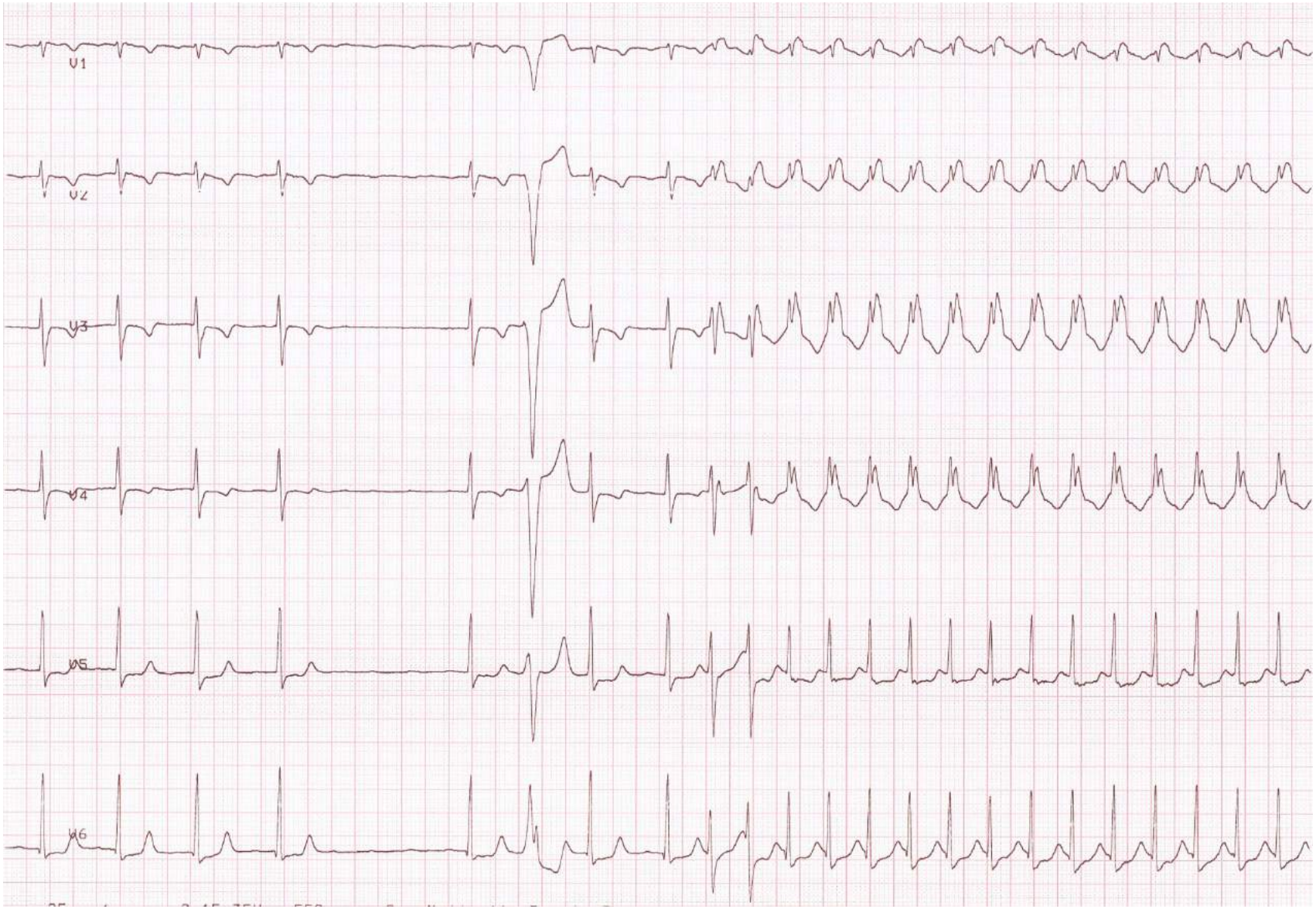
ECG DIVINO Asti

Male 18 years old

History of palpitations…..

ECG DIVINO Asti


I
II
III
aVR
aVL
aVF
25 mm/s
0.15-35Hz F525 r25 r25 mm/s
0.15-35Hz F50
Osp.Molinette Pronto S

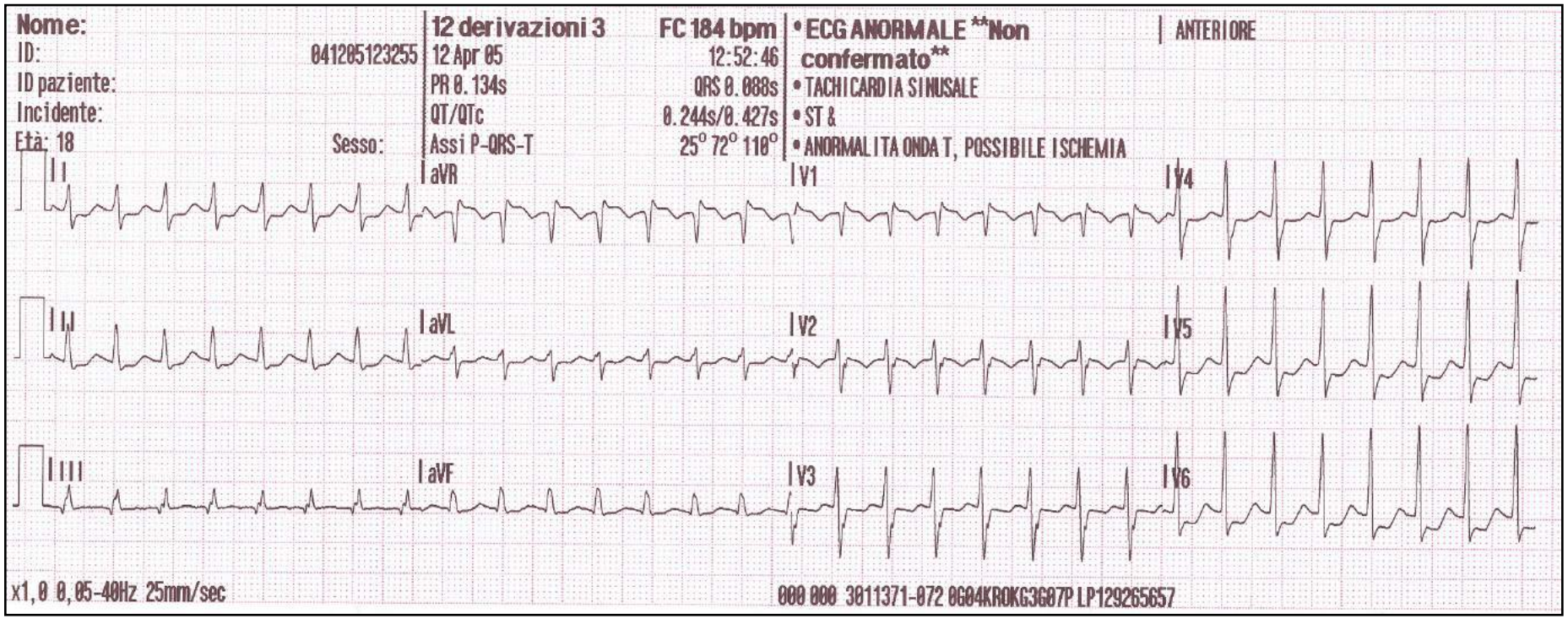

V1
V2
V3
V4
V5
V6

One or two tachycardias ?

1) No
2) Yes

Which is the diagnosis?

1) AVNRT with or without aberrant conduction
2) Atrial tachycardia
3) Atrial flutter
4) Antidromic and ortodromic AVRT
5) AVRT with aberrant conduction
6) VT

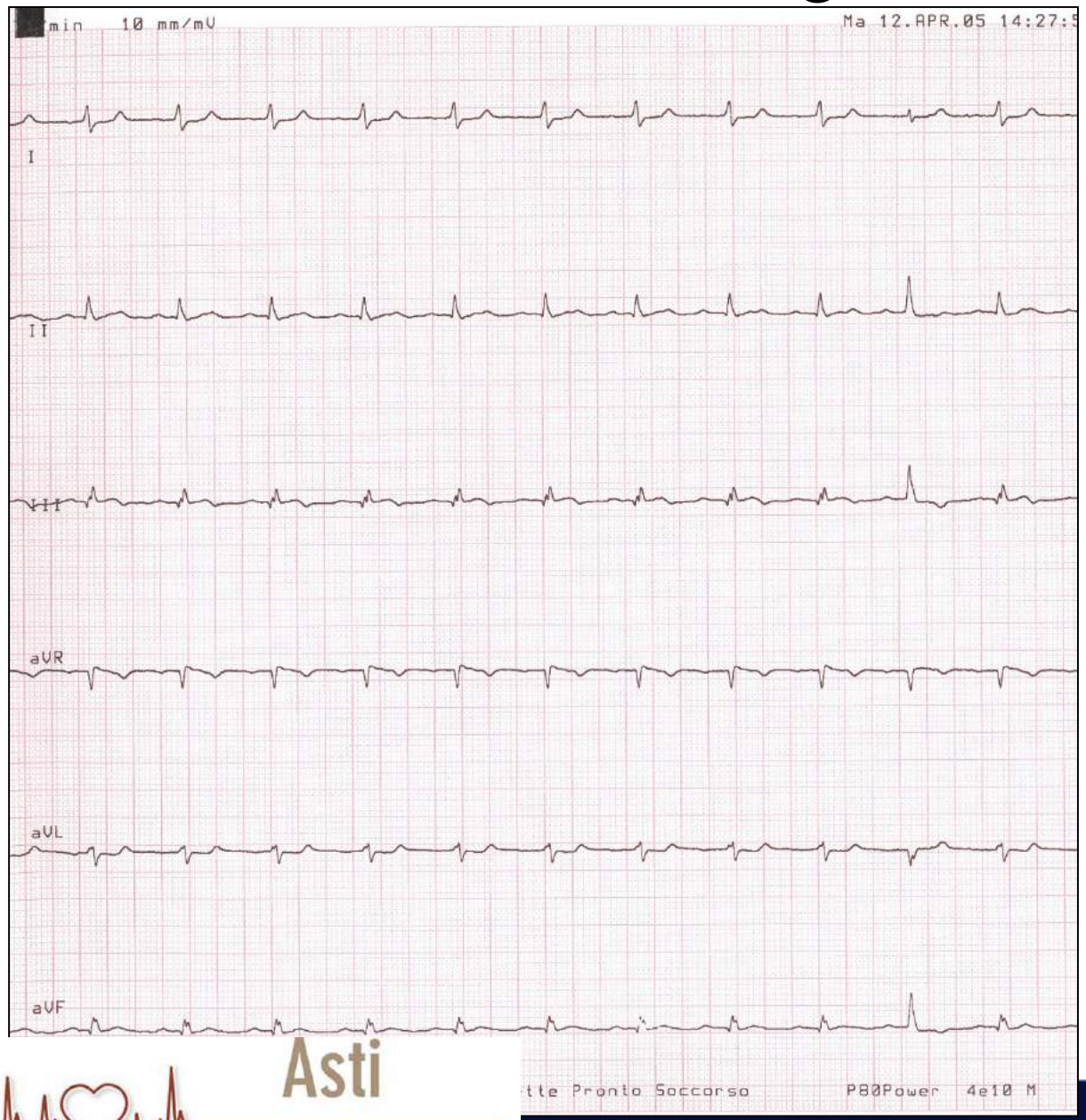


ECG DIVINO Asti

Diagnostic maneuvers

1) CSM
2) Adenosine
3) SATE

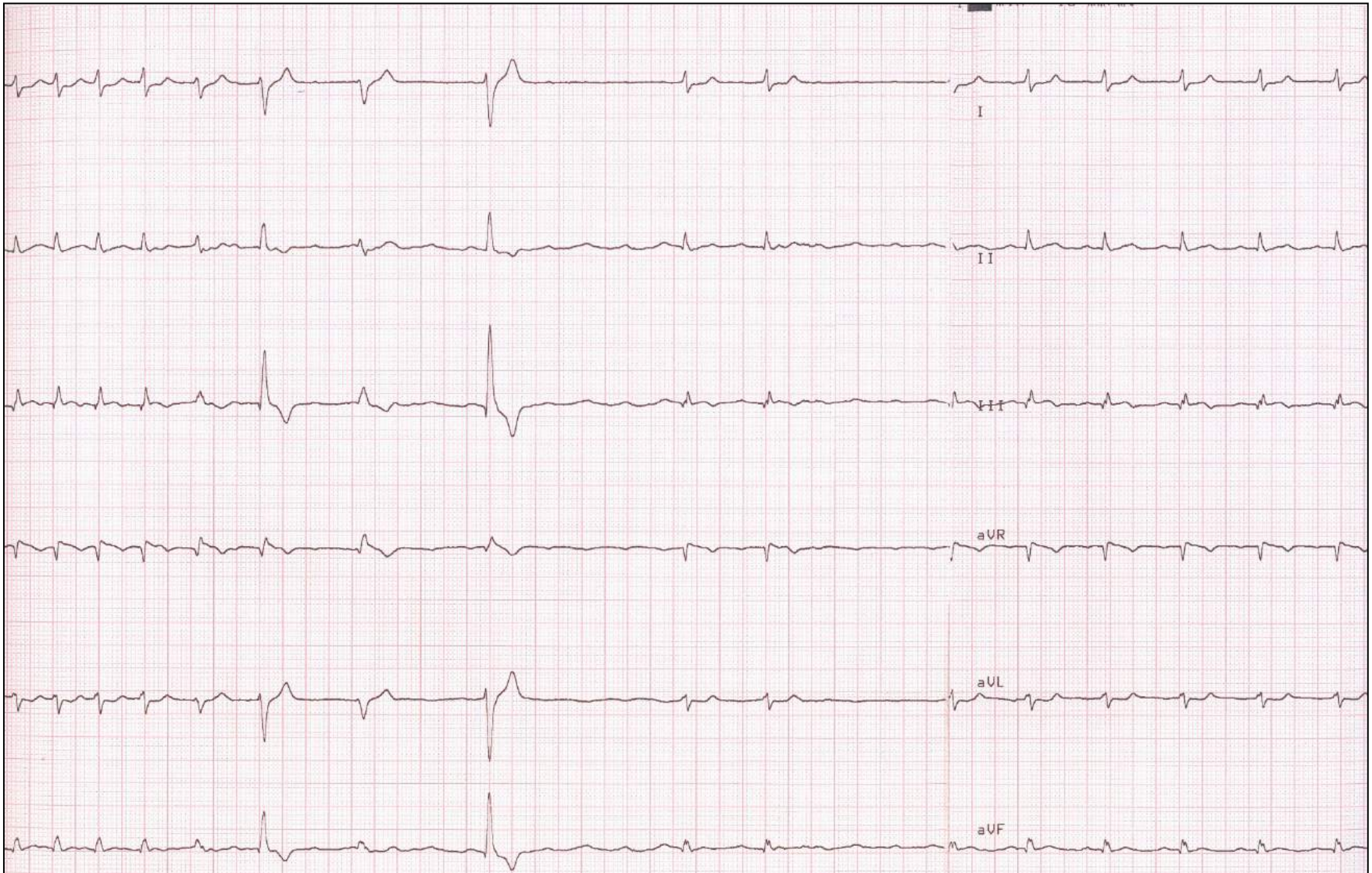
After adenosine 6 mg i.v.

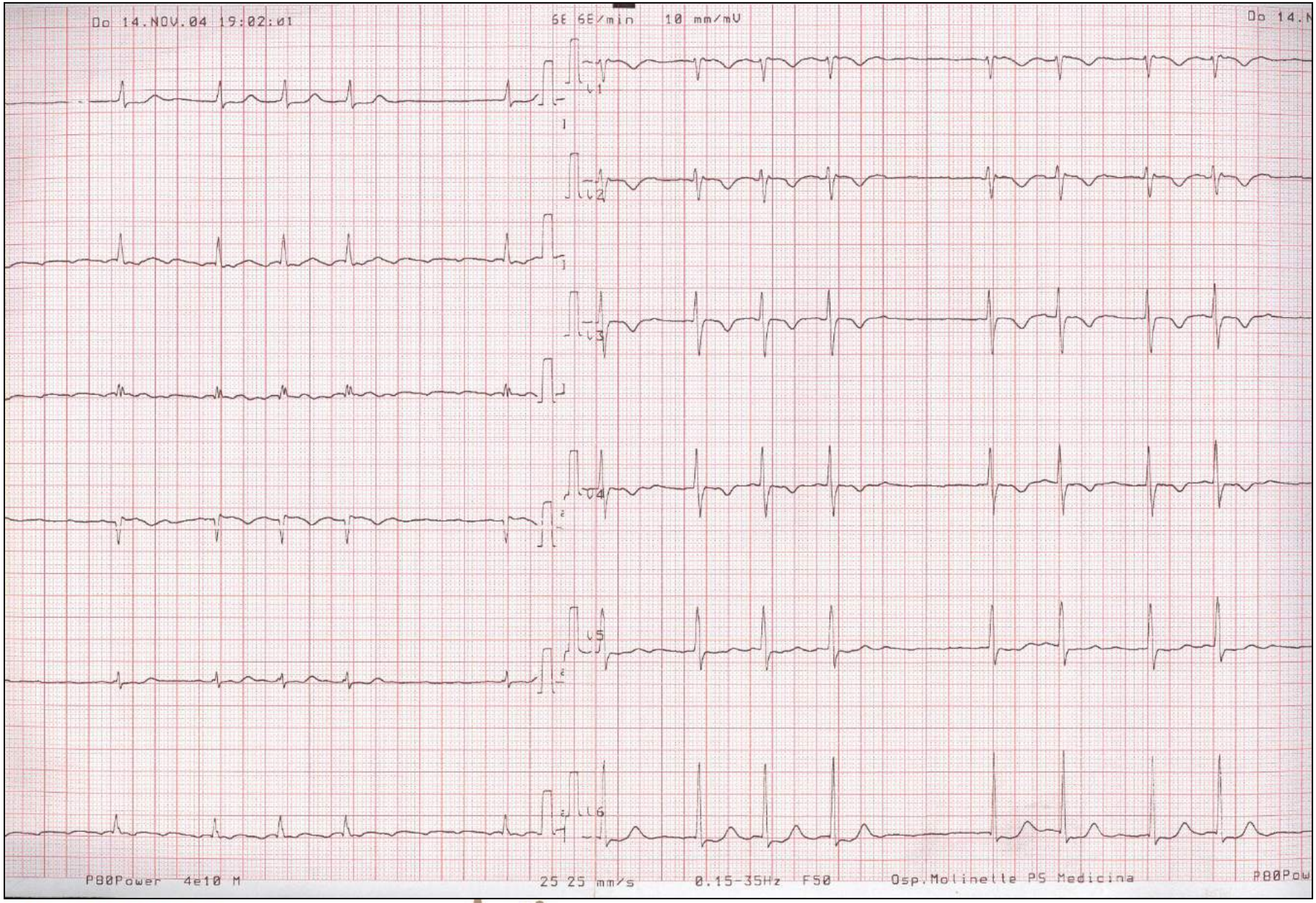


Which is the heart rhythm?

1) SR
2) Atrial tachycardia (2:1)
3) Atrial flutter (2:1)

After adenosine 12 mg i.V.





ECG DIVINO Asti

Which is the diagnosis?

1) Atrial tachycardia
2) Atypical Atrial flutter
3) Typical Atrial flutter
4) Coarse AF

Which is the diagnosis?

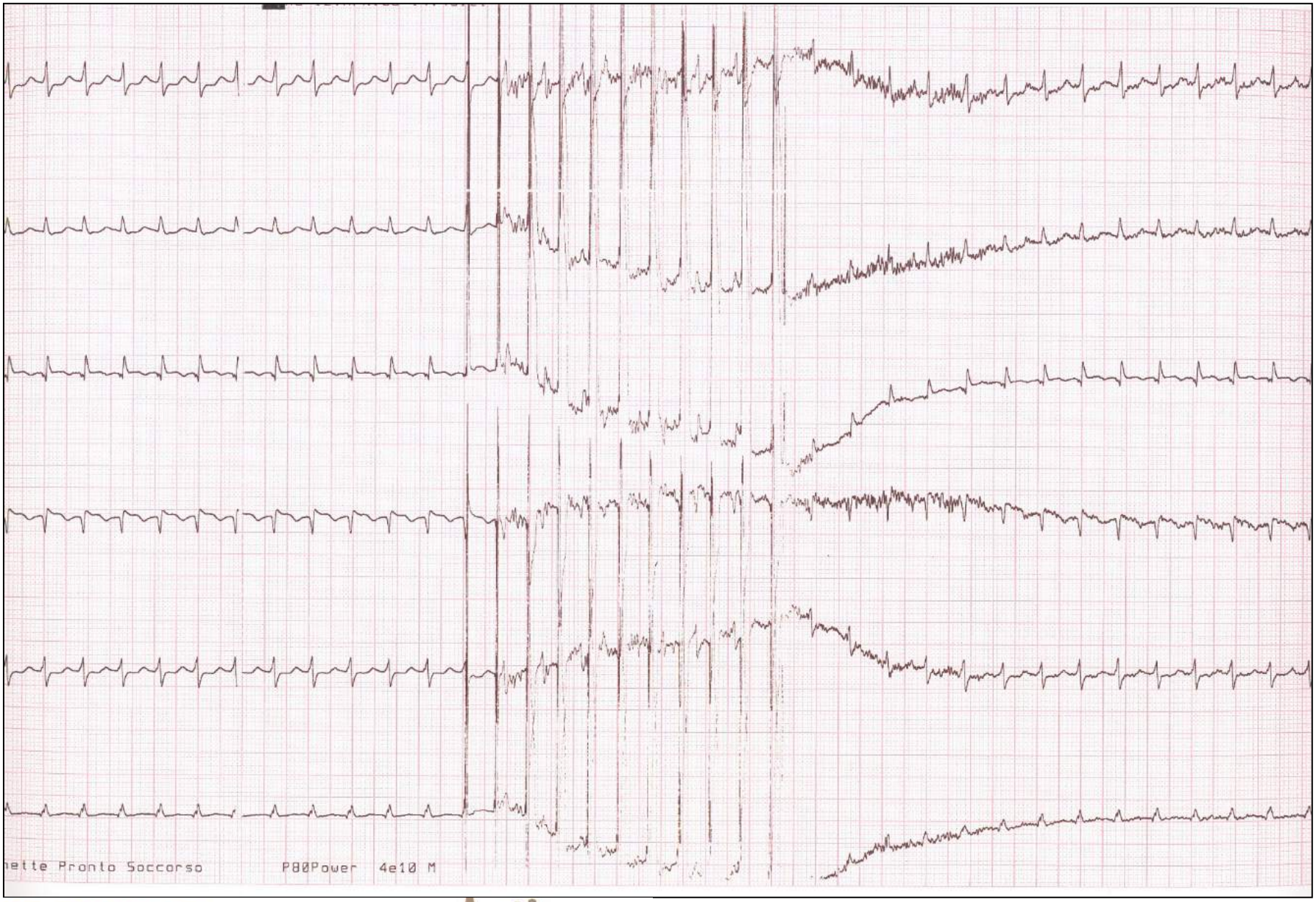
Aberrant conduction

VT

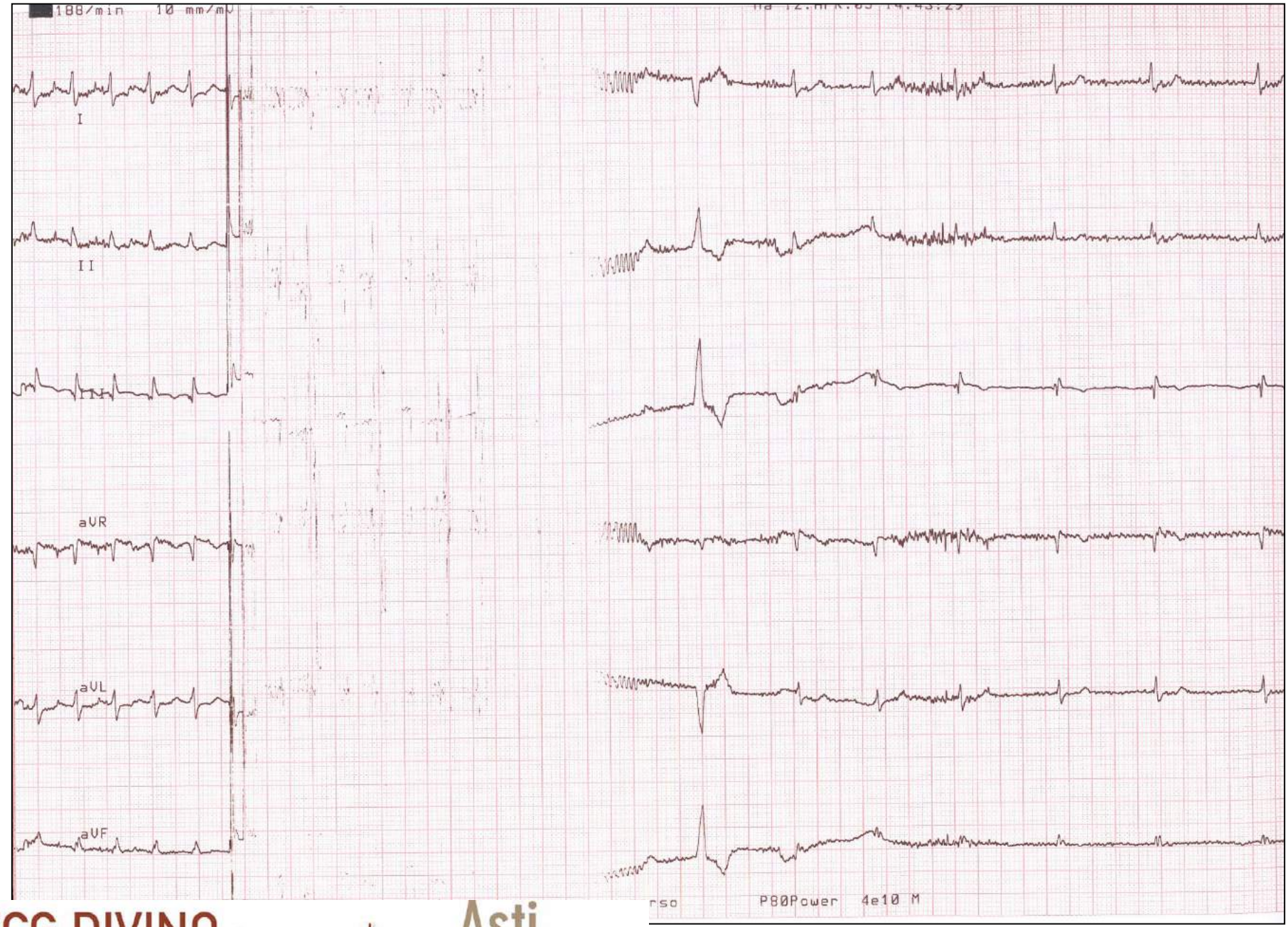
Ventricular Prexcitation

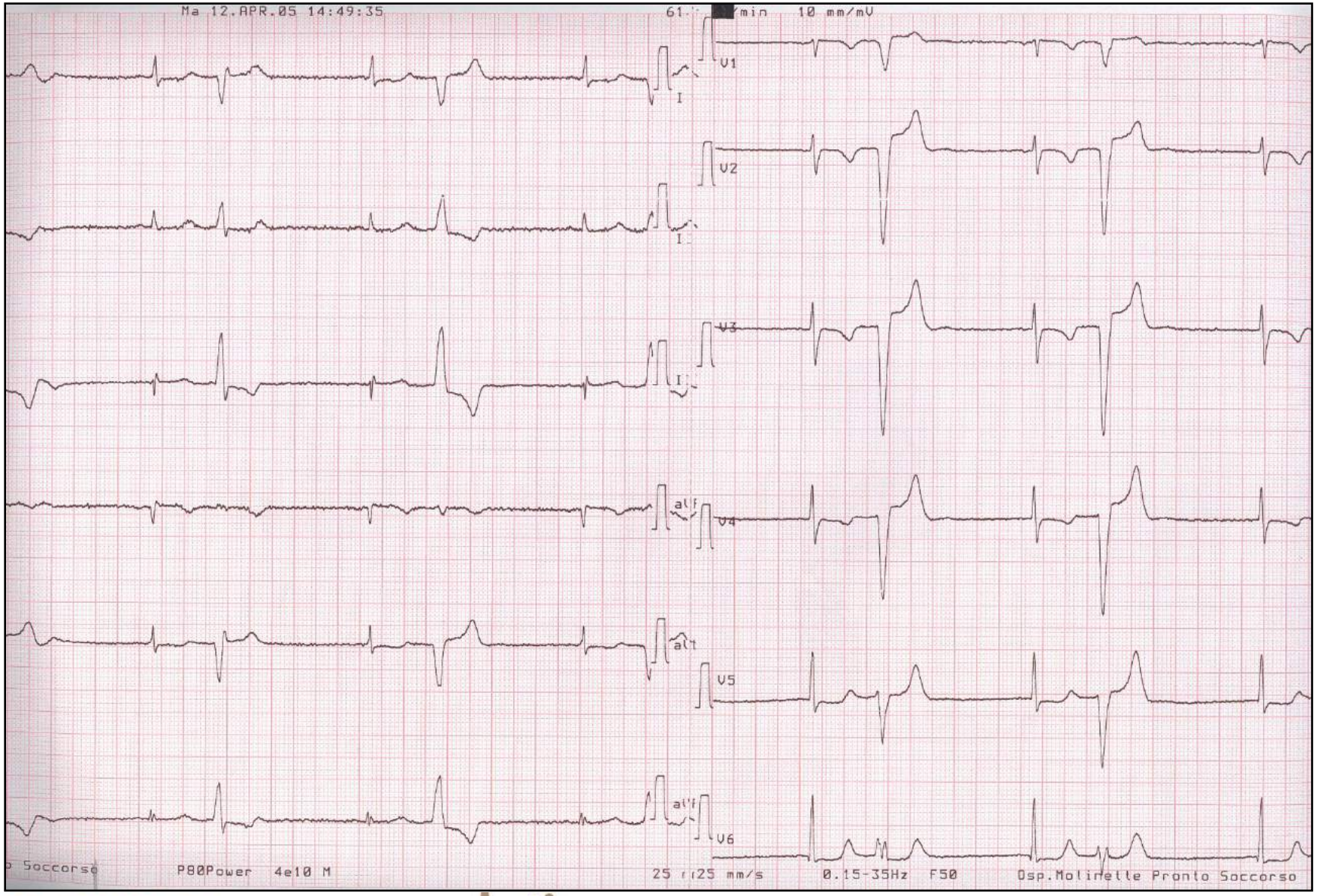
Which therapeutic options would you consider?

1) Amiodarone
2) IC
3) Verapamil
4) SATE
5) ECV



ECG DIVINO Asti

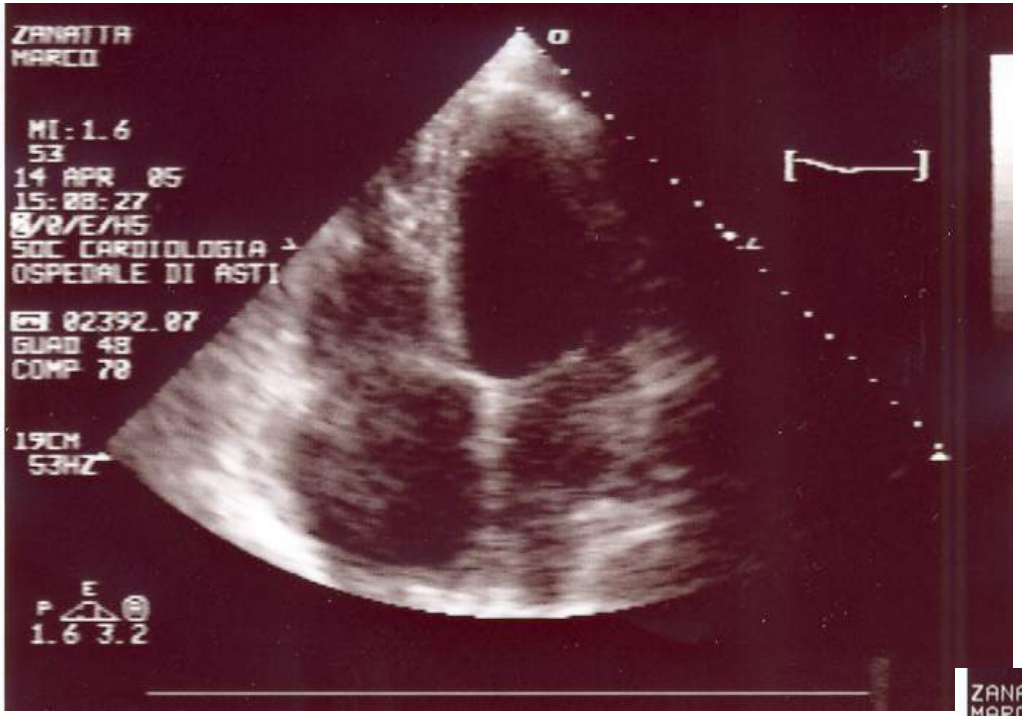

188/min
10 mm/mV
I
II
III
aVR
aVL
aVF
P80Power 4e10 M



ECG DIVINO Asti

…if you don‘t consider ventricular premature beats, ECG is

1) NORMAL ECG
2) ABNORMAL ECG


ZANATTA
MARCO
MI:1.6
S3
14 APR 05
15:08:27
2/0/E/H5
SOC CARDIOLOGIA
OSPEDALE DI ASTI
02392.07
GUAD 48
COMP 70
19CM
53HZ
P E R
1.6 3.2

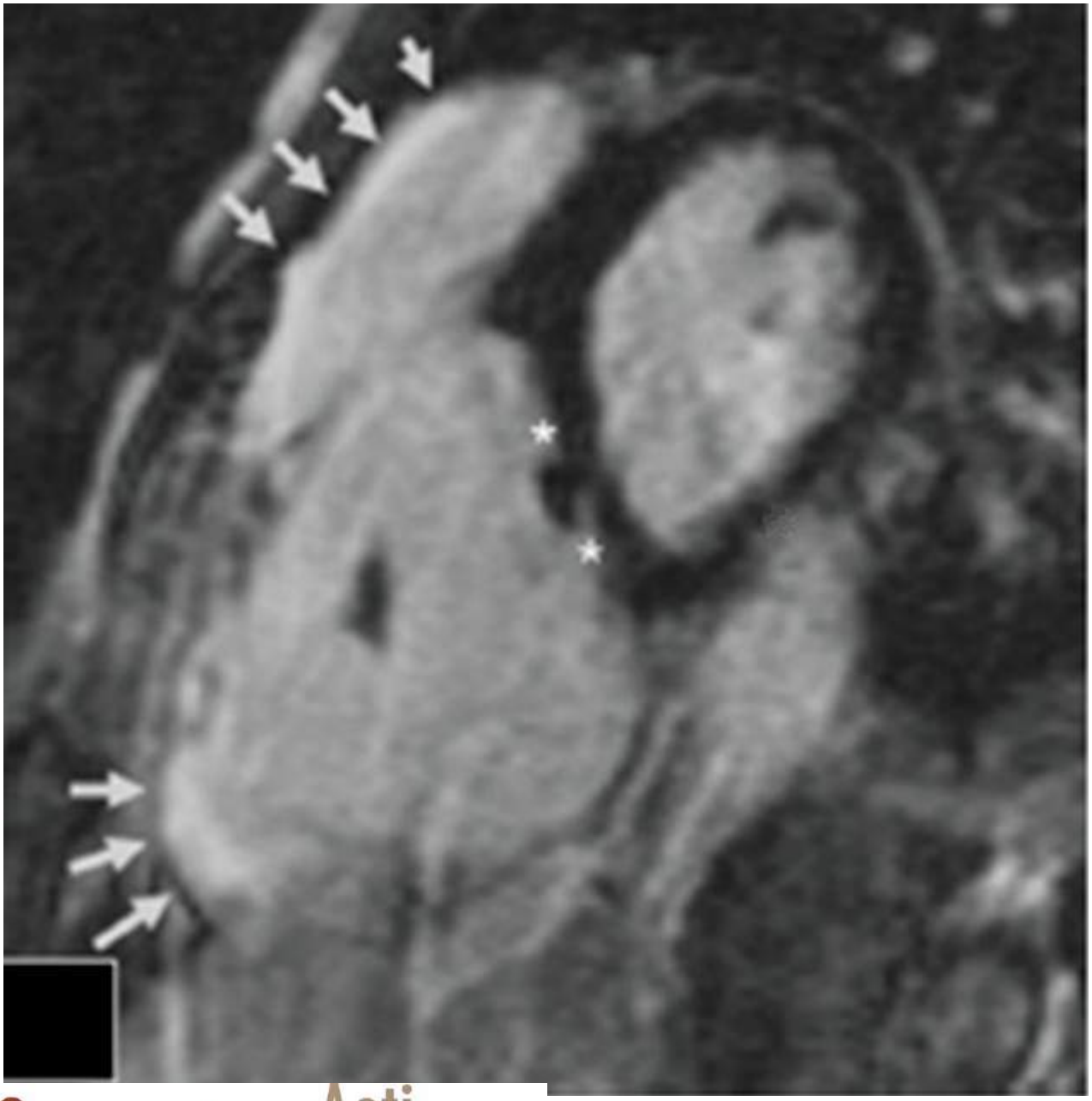

ZANATTA
MARCO
MI:1.6
S3
14 APR 05
15:16:51
2/0/E/H5
SOC CARDIOLOGIA
OSPEDALE DI ASTI
02683.47
GUAD 48
COMP 70
19CM
63HZ
P E R
1.6 3.2

Male 18 years old

Negative family history

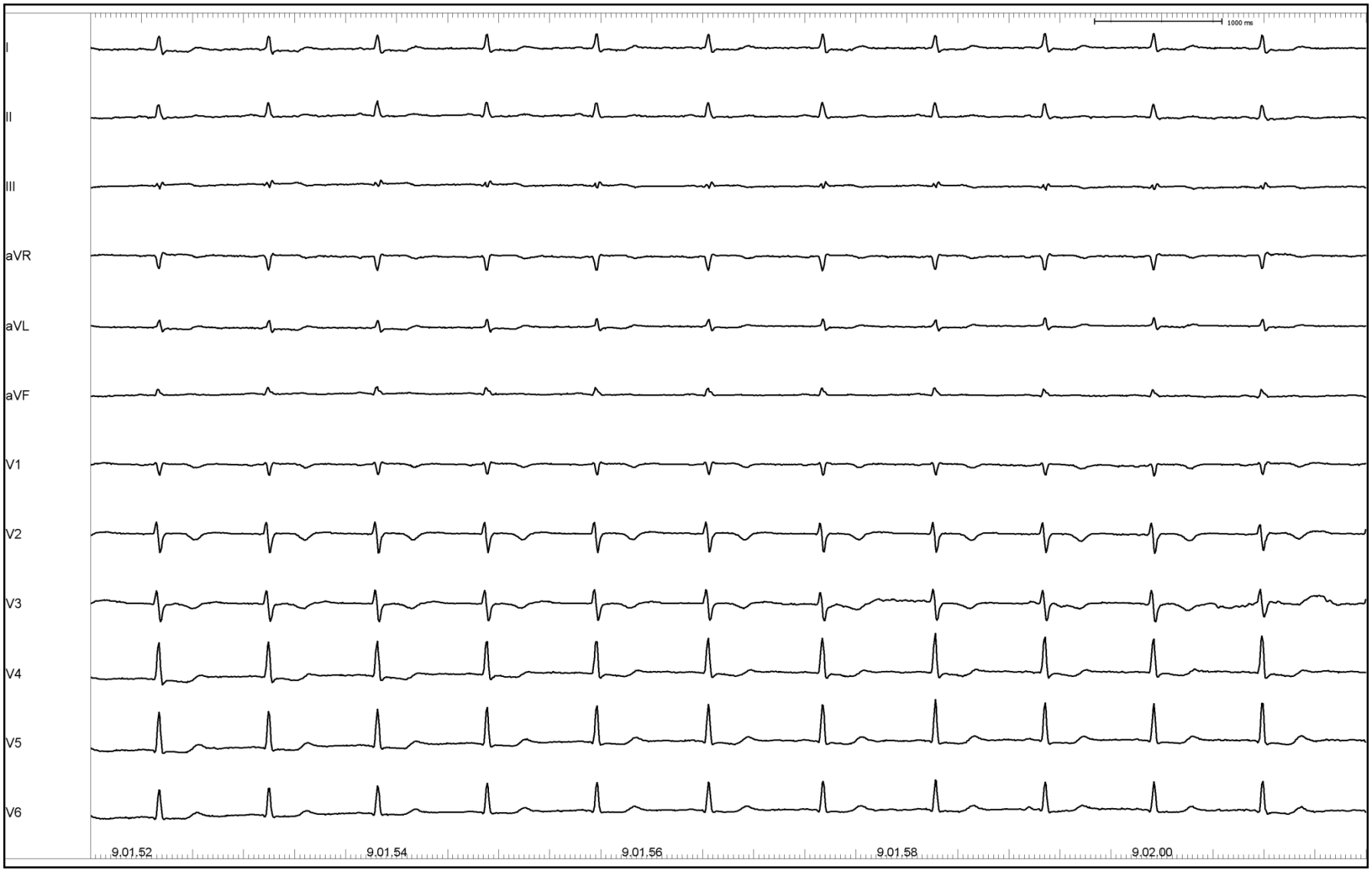
History of palpitations

Echocardiogram: EF 53%, dilated RV, left and right atrium

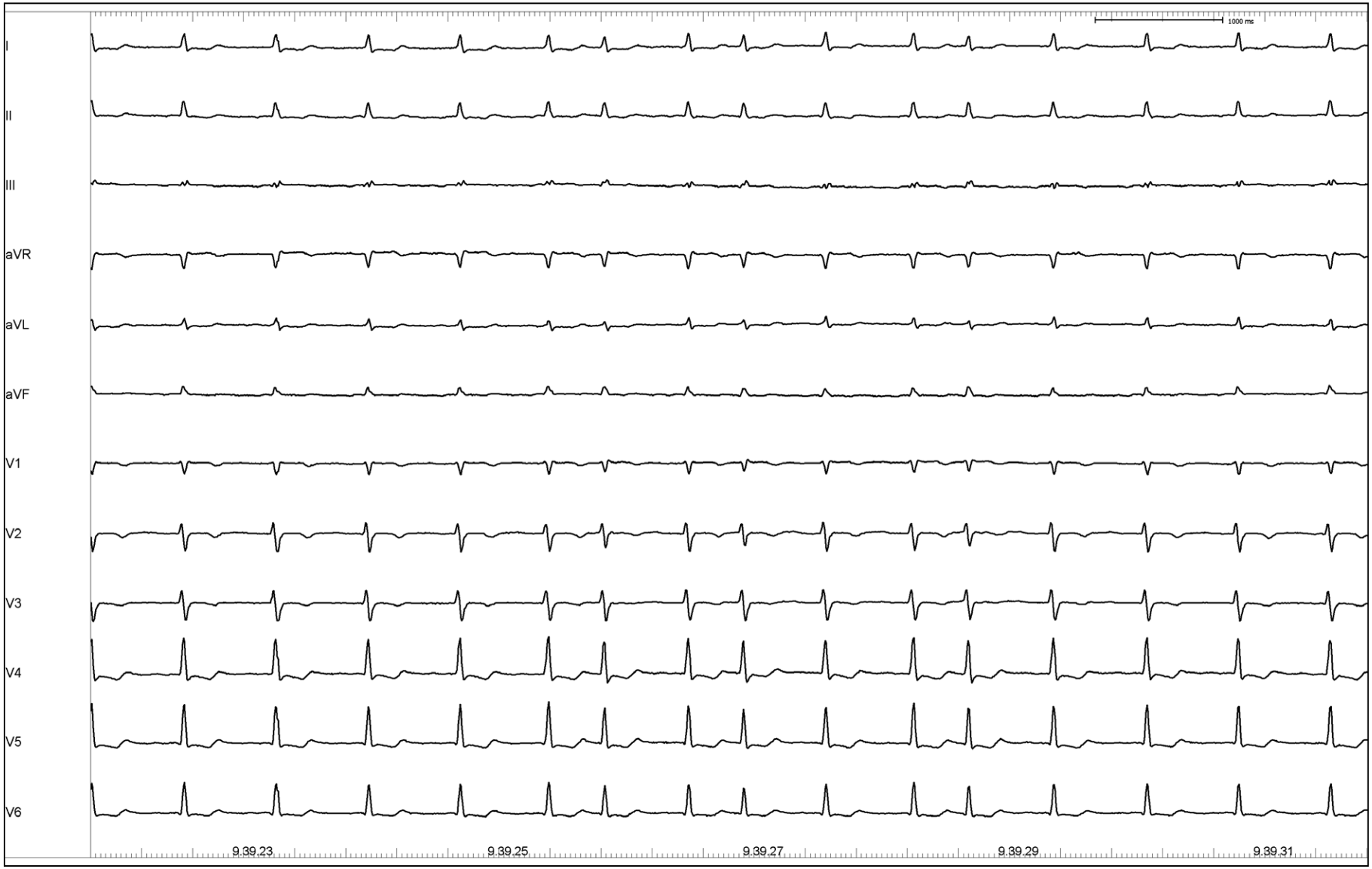


Which therapeutic options would you consider?

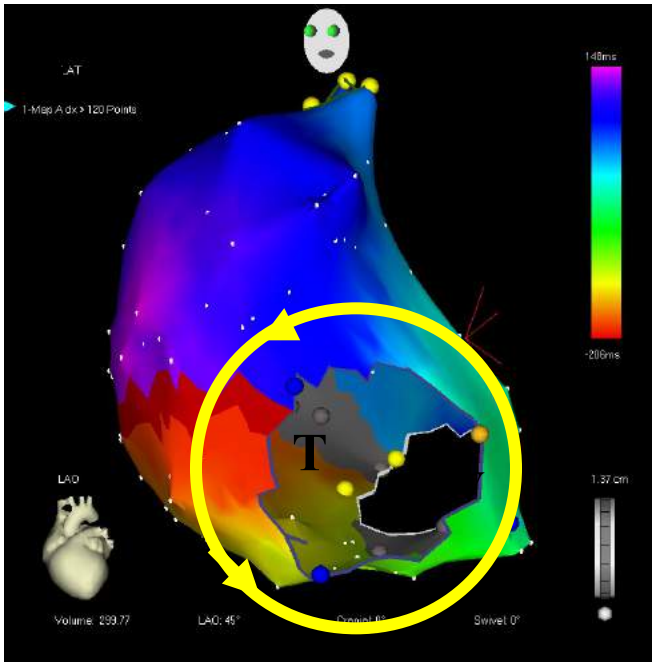
1) Amiodarone
2) IC
3) Verapamil
4) Ablation

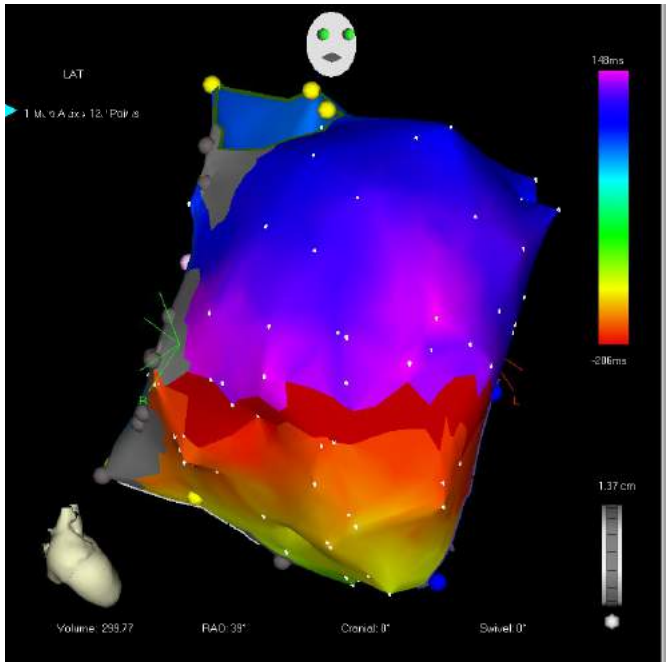

1000 ms
I
II
III
aVR
aVL
aVF
V1
V2
V3
V4
V5
V6
9.01.52
9.01.54
9.01.56
9.01.58
9.02.00

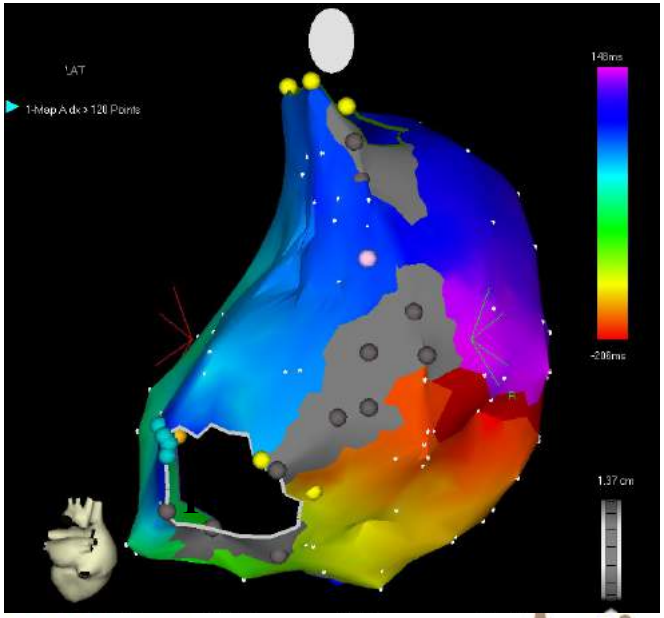

CS 7,8
CS 5,6
CS 3,4
CS 1,2
280 ms
II
I
III
V1
9.40.20
9.40.21

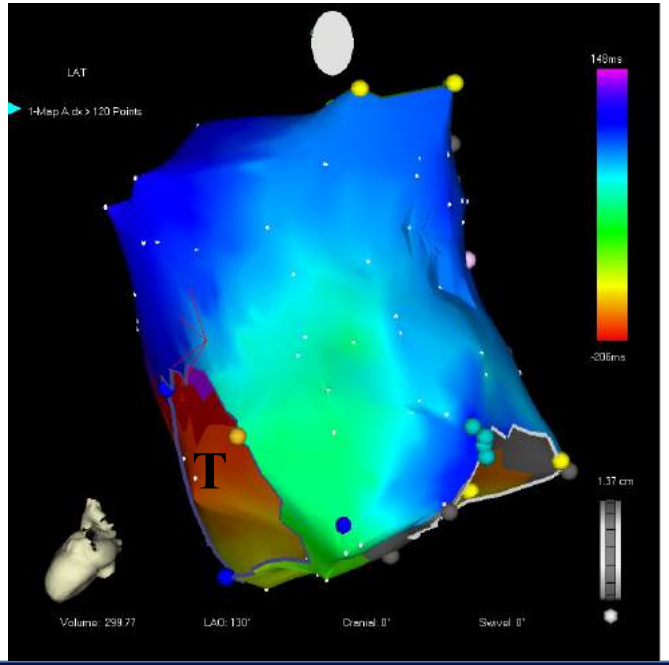

1000 ms
I
II
III
aVR
aVL
aVF
V1
V2
V3
V4
V5
V6
9.39.23
9.39.25
9.39.27
9.39.29
9.39.31


CS 7,8
CS 5,6
CS 3,4
360 ms
CS 1,2
II
I
III
V1
10.11.25
10.11.26

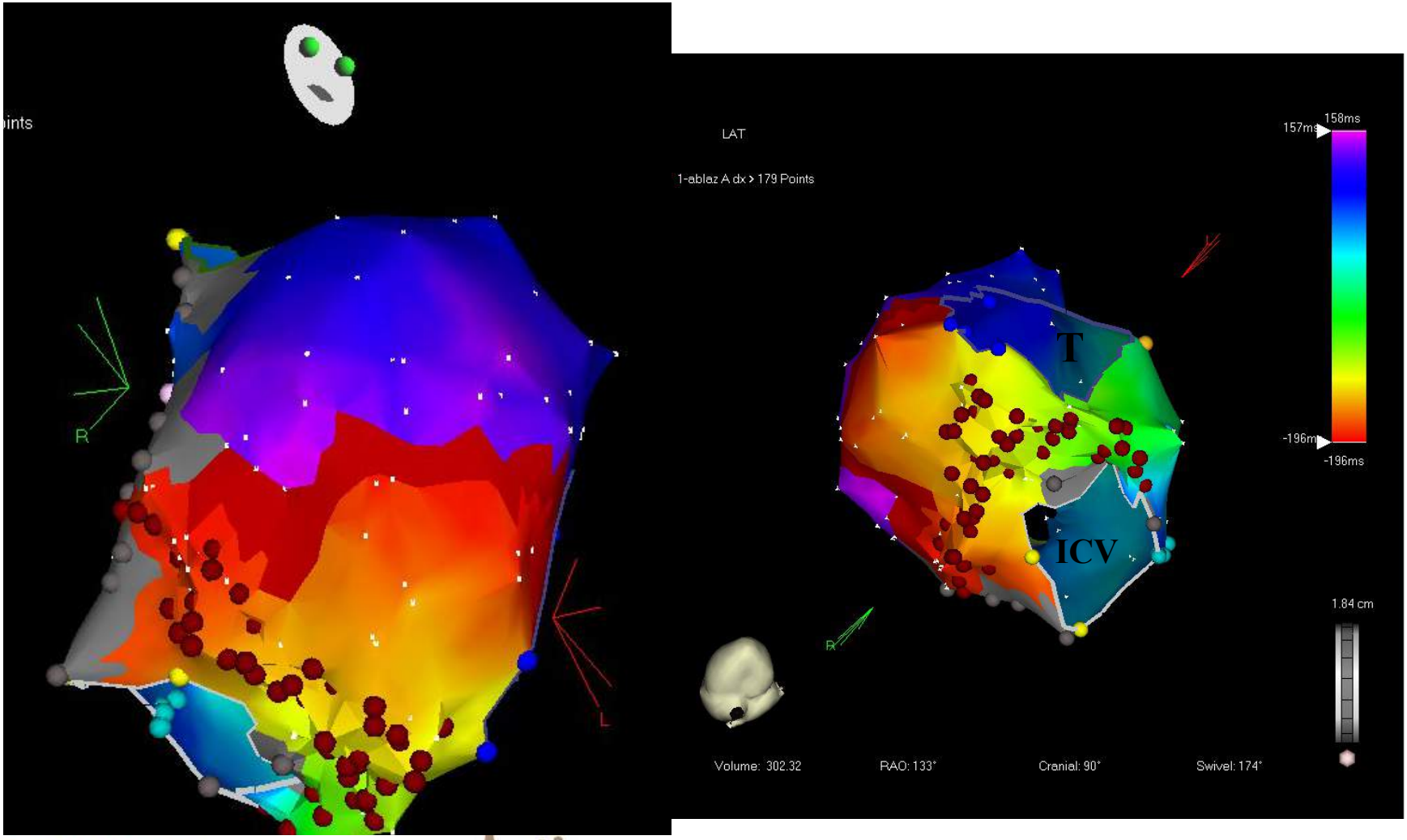

LAT
148ms
-206ms
1.37 cm
T
LAO
Volume: 299.77
LAO: 45°
Cranial: 0°
Swivel: 0°

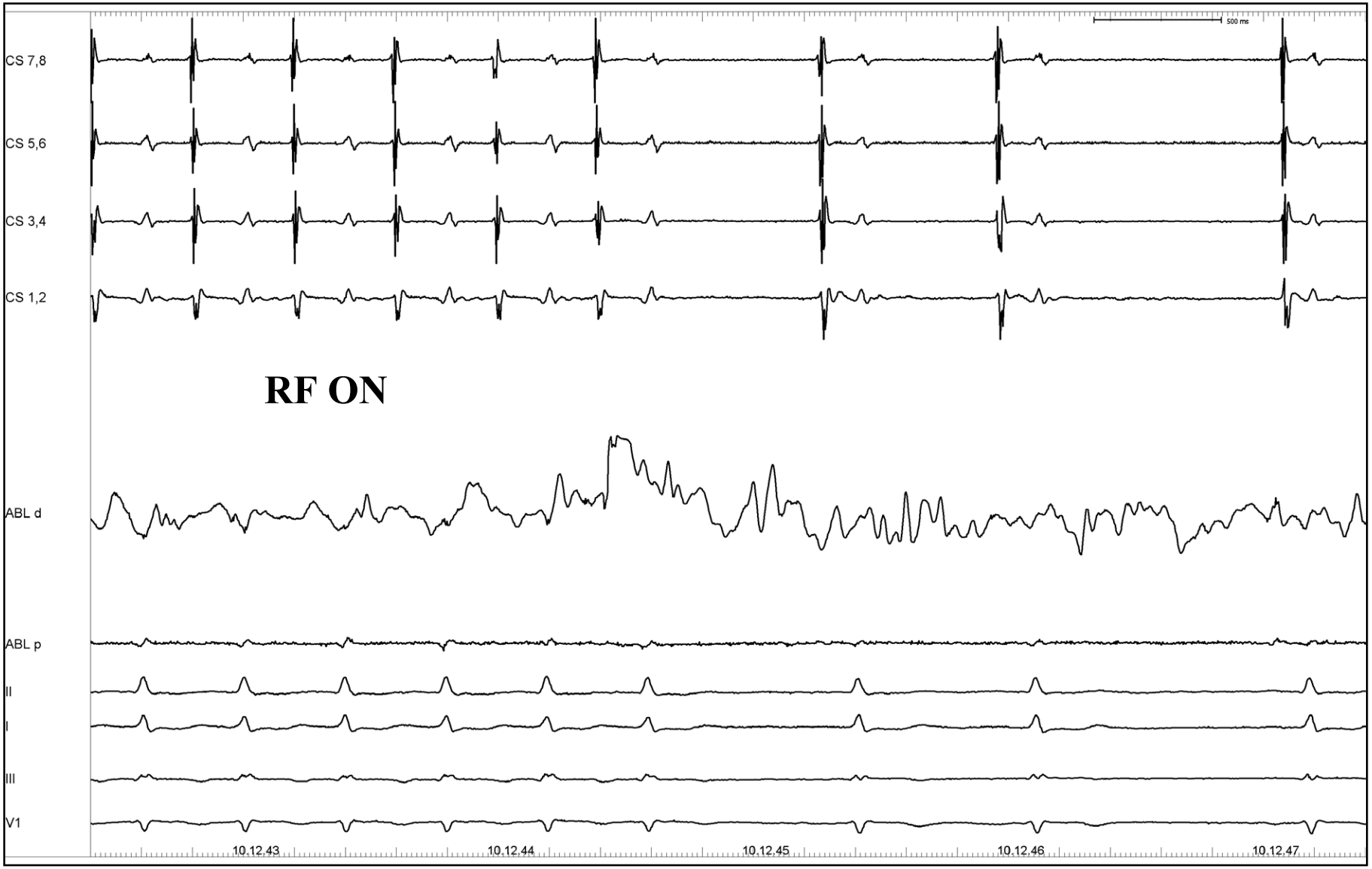

LAT
148ms
-206ms
1.37 cm
Volume: 299.77
RAO: 39°
Cranial: 0°
Swivel: 0°


LAT
148ms
-206ms
1.37 cm

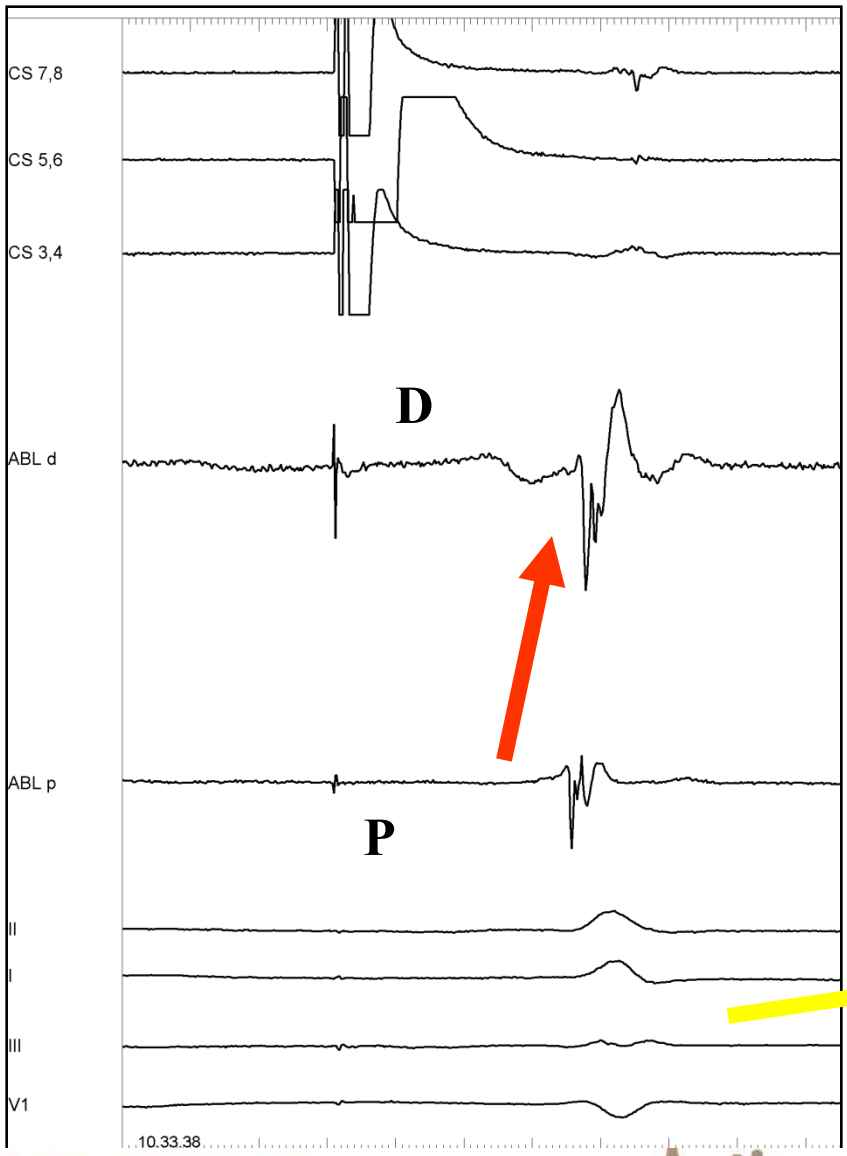

LAT
148ms
-206ms
1.37 cm
T
Volume: 299.77
LAO: 130°
Cranial: 0°
Swivel: 0°

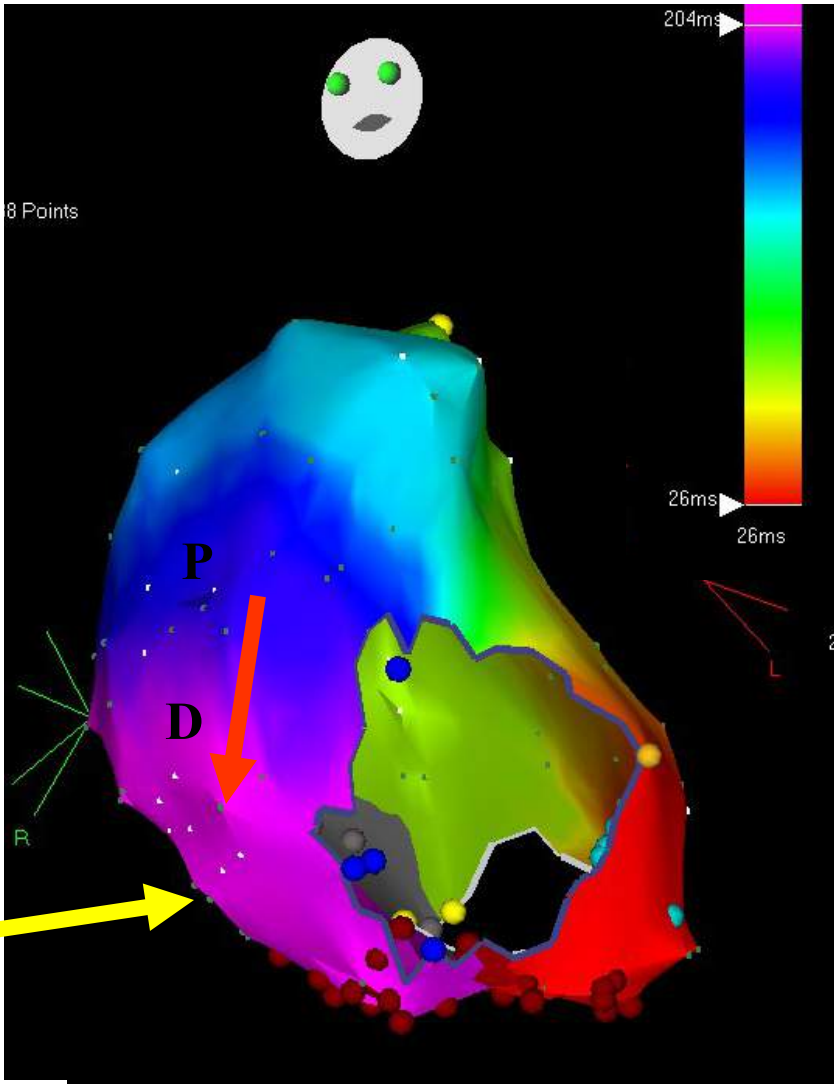
ABLATION LINE




500 ms
CS 7,8
CS 5,6
CS 3,4
CS 1,2
RF ON
ABL d
ABL p
II
I
III
V1
10.12.43
10.12.44
10.12.45
10.12.46
10.12.47

POST ABLATION REMAP






S1S1: 235
500 ms
CS 7,8
CS 3,4
CS 1,2
II
235 ms
I
III
V1
10.29.32
10.29.33
10.29.34

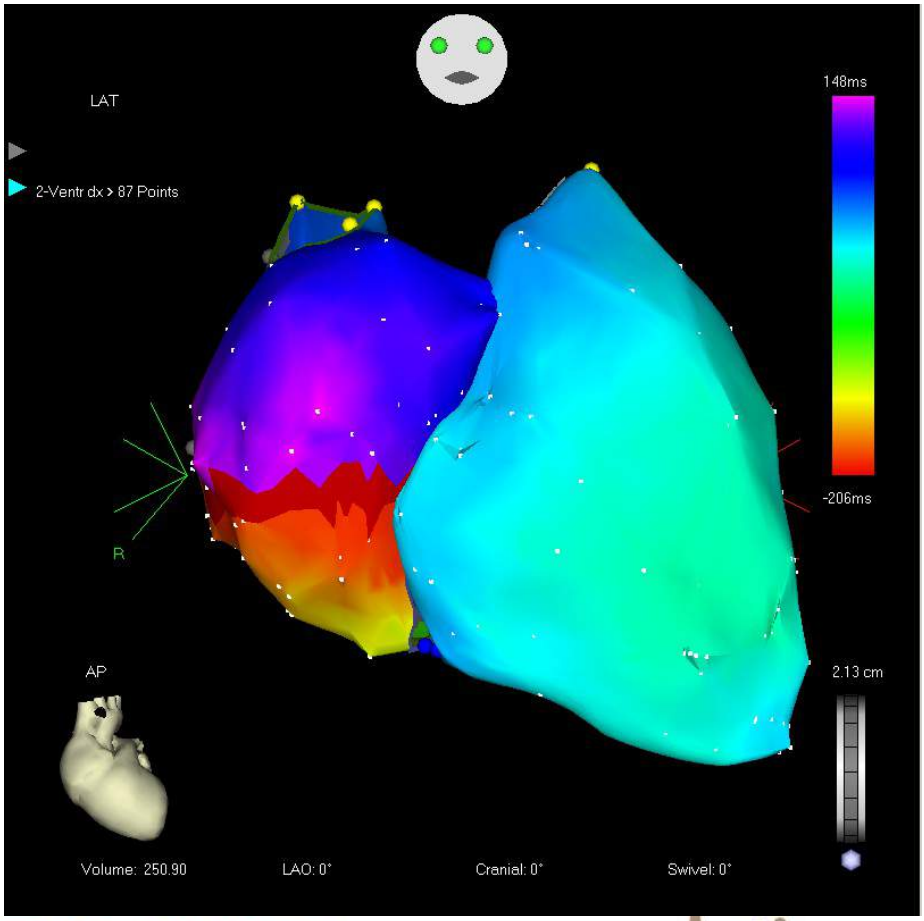
Male 18 years old

2001 palpitations
Self terminating Wide QRS complexes tachycardia → VT
Diagnosis of ARVD
EP study → no induction
Discharged on nadolol

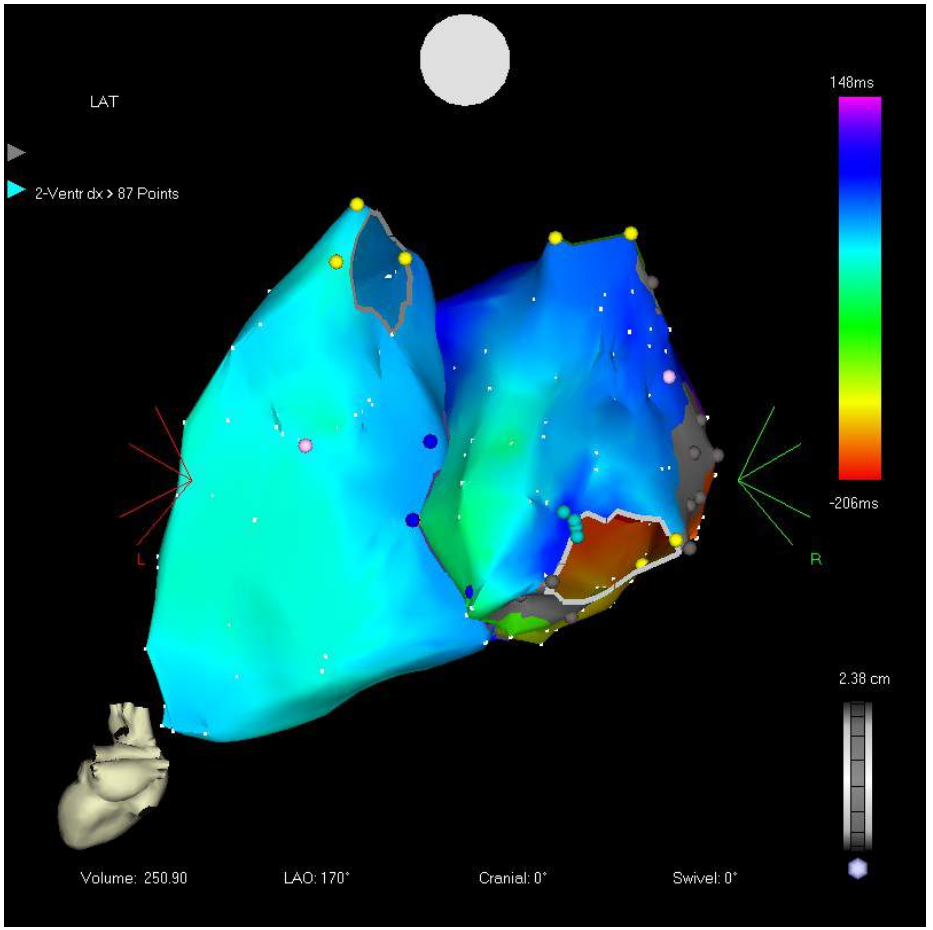
2003 Echocardiogram: EF 53%, dilated RV, left and right atrium

11/2004 palpitations

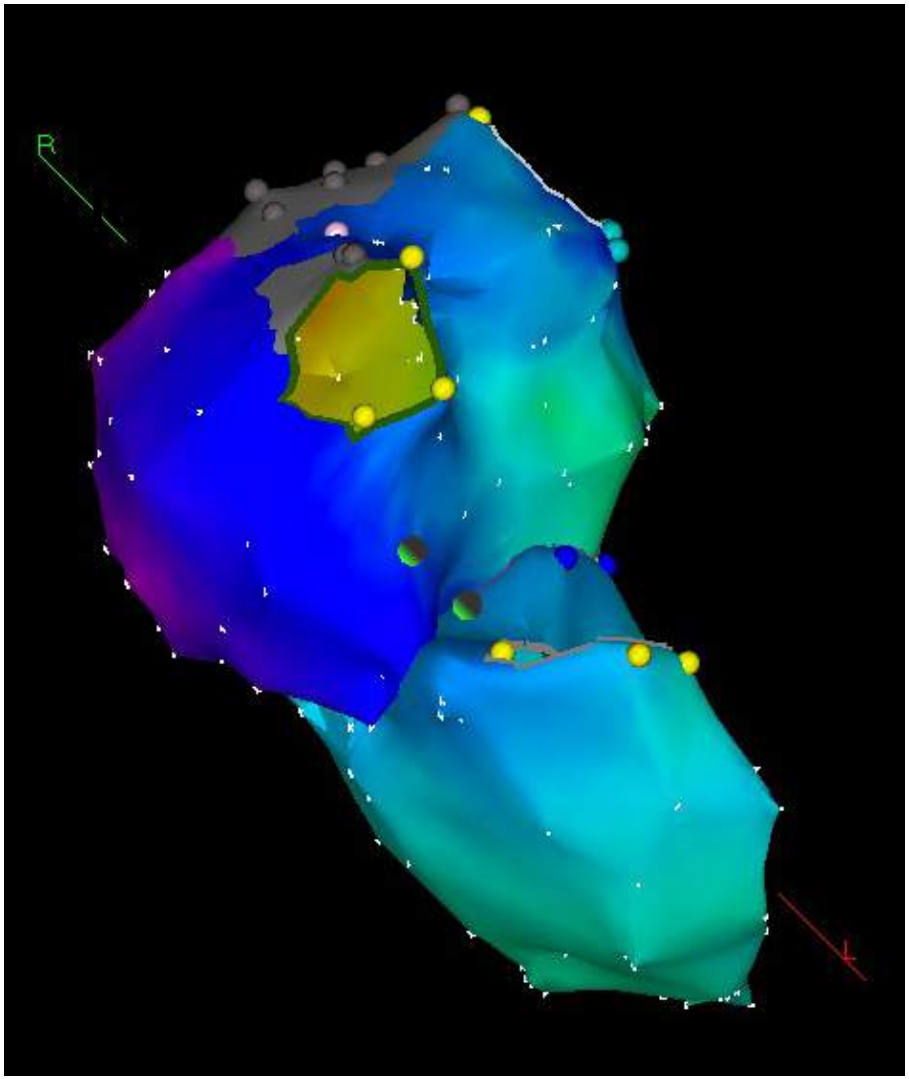
AP

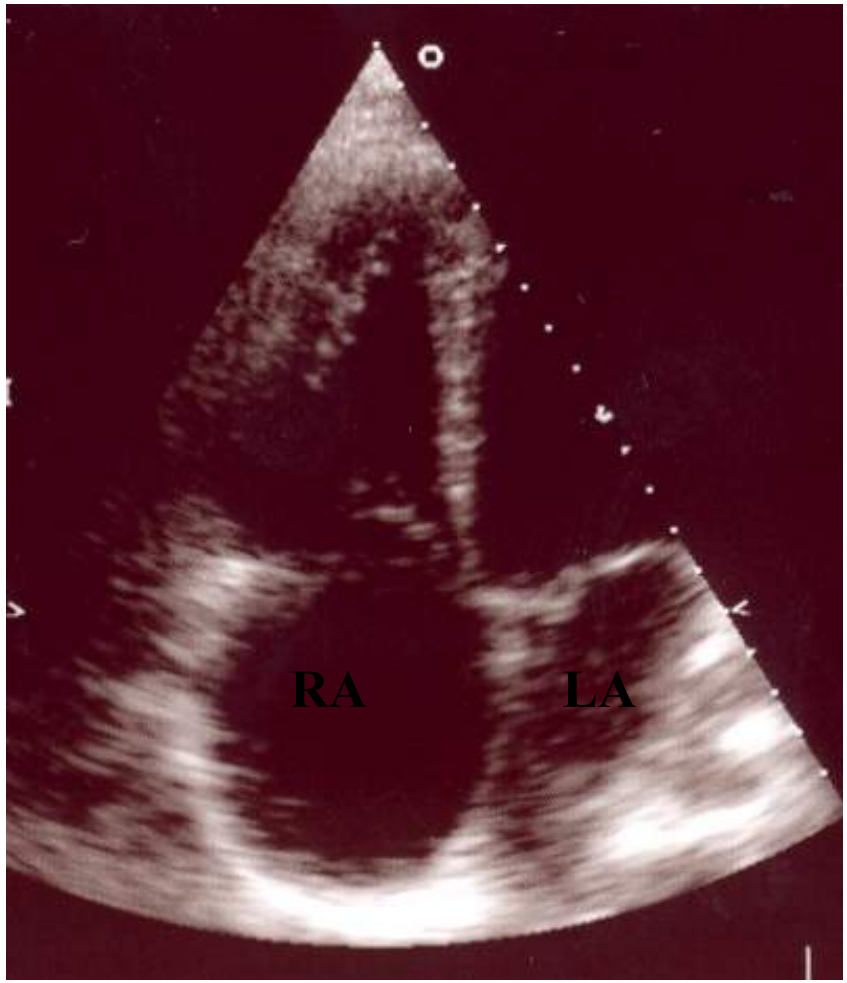

LAT
2-Ventr dx > 87 Points
148ms
-206ms
R
AP
2.13 cm
Volume: 250.90
LAO: 0°
Cranial: 0°
Swivel: 0°

PA


LAT
2-Ventr dx > 87 Points
148ms
-206ms
L
R
2.38 cm
Volume: 250.90
LAO: 170°
Cranial: 0°
Swivel: 0°

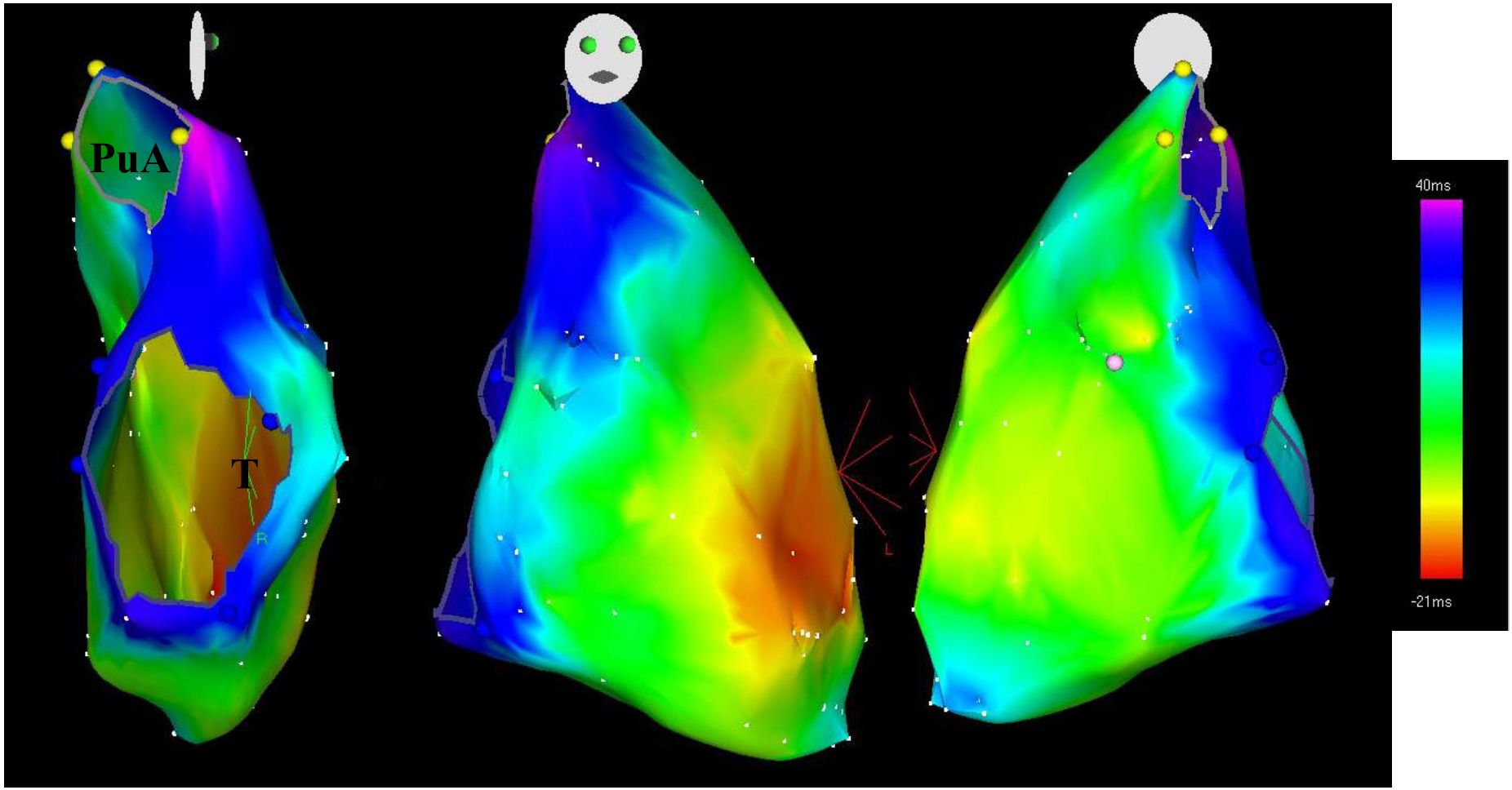
SUPERIOR VIEW





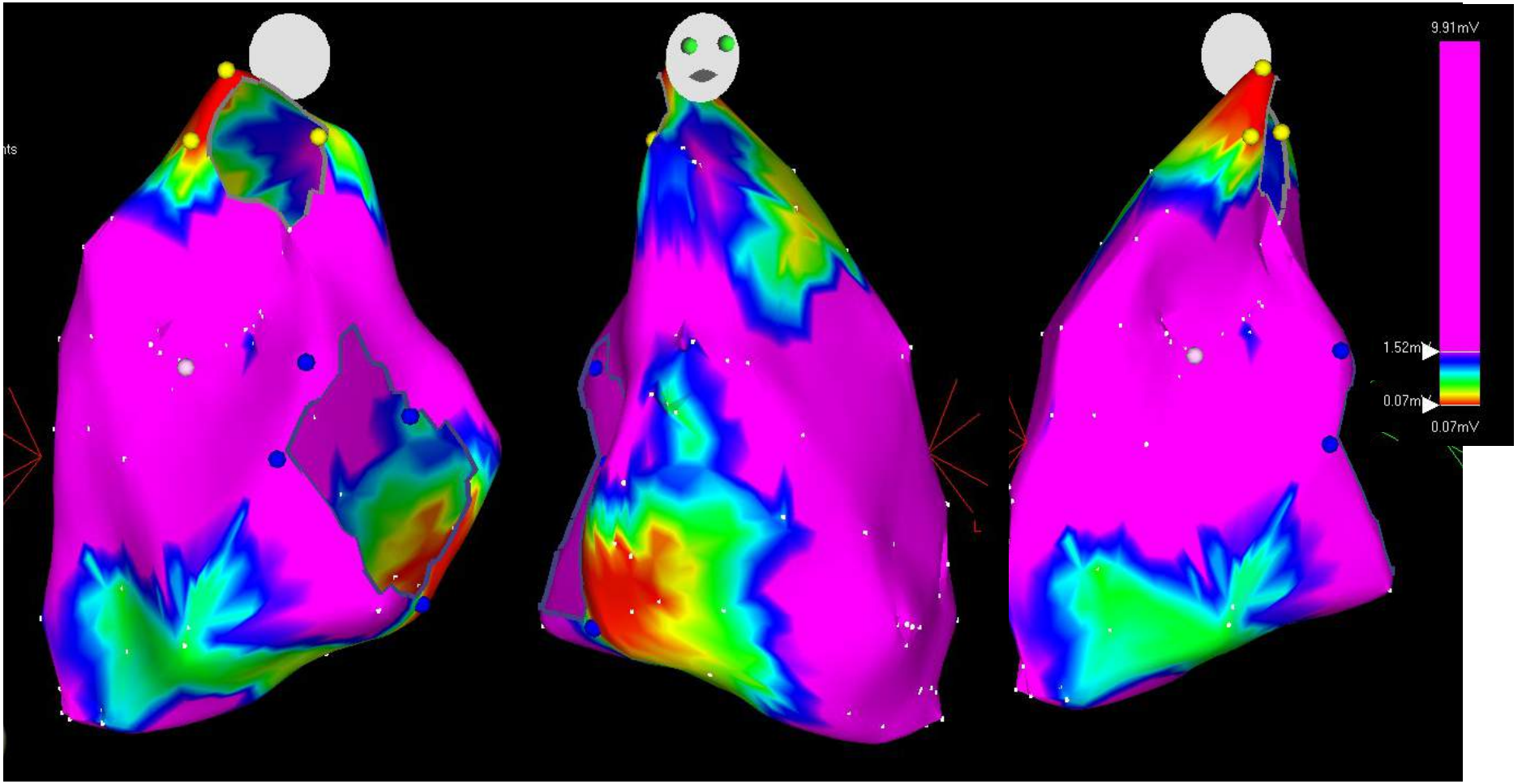
ACTIVATION MAP

PA RAO LL



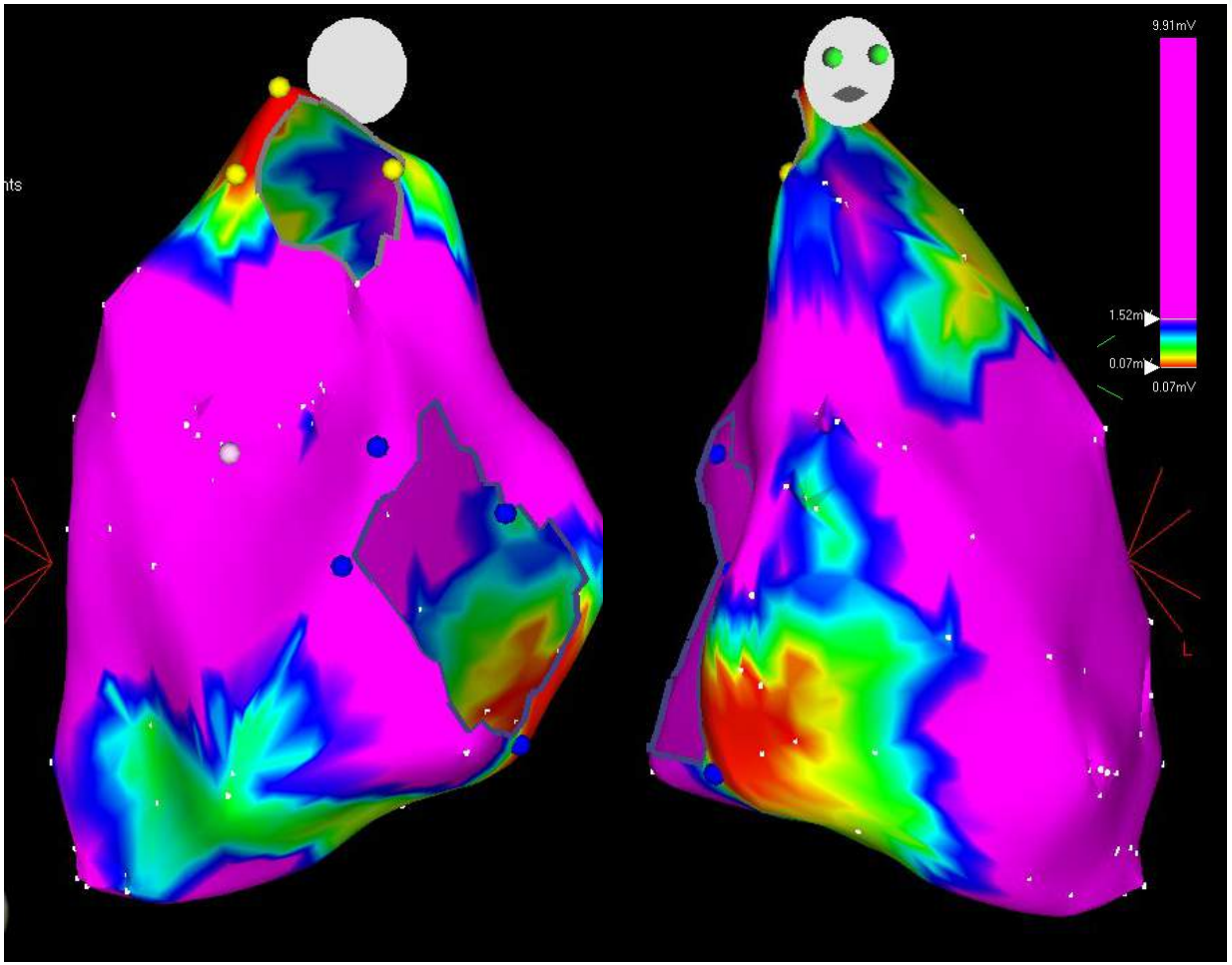
VOLTAGE MAP

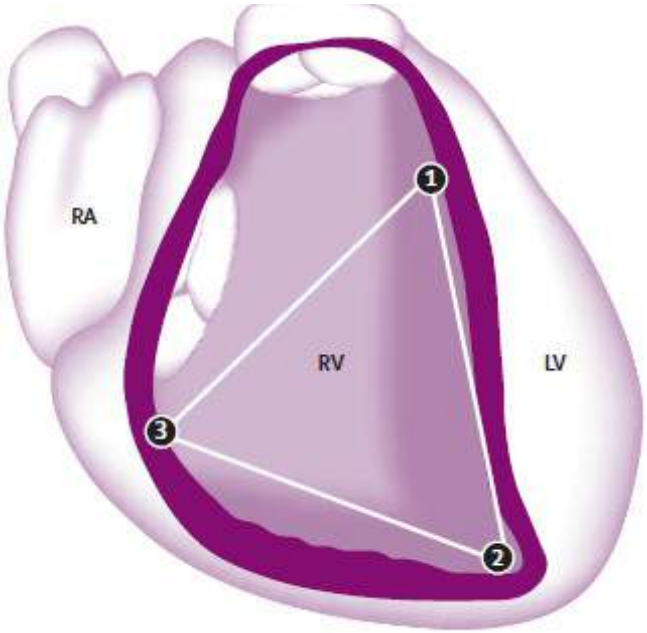
PA RAO LL



VOLTAGE MAP

PA RAO





Original task force criteria	Revised task force criteria
I. Global or regional dysfunction and structural alterations*	
Major	
	By 2D echo:
• Severe dilatation and reduction of RV ejection fraction with no (or only mild) LV impairment • Localized RV aneurysms (akinetic or dyskinetic areas with diastolic bulging) • Severe segmental dilatation of the RV	• Regional RV akinesia, dyskinesia, or aneurysm • *and* 1 of the following (end diastole): — PLAX RVOT ≥32 mm (corrected for body size [PLAX/BSA] ≥19 mm/m^2) — PSAX RVOT ≥36 mm (corrected for body size [PSAX/BSA] ≥21 mm/m^2) — *or* fractional area change ≤33%
Minor	
• Mild global normal LV • Mild segme • Regional R	
	• Regional RV akinesia or dyskinesia or dyssynchronous RV contraction • *and* 1 of the following: — Ratio of RV end-diastolic volume to BSA ≥100 to <110 mL/m^2 (male) or >90 to <100 mL/m^2 (female) — ejection fraction >40% to ≤45%

Original task force criteria	Revised task force criteria
II. Tissue characterization of wall	
Major	
• Fibrofatty replacement of myocardium on endomyocardial biopsy	• Residual myocytes <60% by morphometric analysis (or <50% if estimated), with fibrous replacement of the RV free wall myocardium in ≥1 sample, with or without fatty replacement of tissue on endomyocardial biopsy
Minor	• Residual myocytes 60% to 75% by morphometric analysis (or 50% to 65% if estimated), with fibrous replacement of the RV free wall myocardium in ≥1 sample, with or without fatty replacement of tissue on endomyocardial biopsy
III. Repolarization abnormalities	
Major	• Inverted T waves in right precordial leads (V_1, V_2, and V_3) or beyond in individuals >14 years of age (in the absence of complete right bundle-branch block QRS ≥120 ms)
Minor	
• Inverted T waves in right precordial leads (V_2 and V_3) (people age >12 years, in absence of right bundle-branch block)	• Inverted T waves in leads V_1 and V_2 in individuals >14 years of age (in the absence of complete right bundle-branch block) or in V_4, V_5, or V_6 • Inverted T waves in leads V_1, V_2, V_3, and V_4 in individuals >14 years of age in the presence of complete right bundle-branch block

Marcus FI Circulation 2010

Original task force criteria	Revised task force criteria
IV. Depolarization/conduction abnormalities	
Major	
• Epsilon waves or localized prolongation (>110 ms) of the QRS complex in right precordial leads (V_1 to V_3)	• Epsilon wave (reproducible low-amplitude signals between end of QRS complex to onset of the T wave) in the right precordial leads (V_1 to V_3)
Minor	
• Late potentials (SAECG)	• Late potentials by SAECG in ≥1 of 3 parameters in the absence of a QRS duration of ≥110 ms on the standard ECG • Filtered QRS duration (fQRS) ≥114 ms • Duration of terminal QRS <40 μV (low-amplitude signal duration) ≥38 ms • Root-mean-square voltage of terminal 40 ms <20 μV
VI. Family history	
Major	
• Familial disease confirmed at necropsy or surgery	• ARVC/D confirmed in a first-degree relative who meets current Task Force criteria • ARVC/D confirmed pathologically at autopsy or surgery in a first-degree relative • Identification of a pathogenic mutation† categorized as associated or probably associated with ARVC/D in the patient under evaluation
Minor	
• Family history of premature sudden death (<35 years of age) due to suspected ARVC/D	• History of ARVC/D in a first-degree relative in whom it is not possible or practical to determine whether the family member meets current Task Force criteria • Premature sudden death (<35 years of age) due to suspected ARVC/D in a first-degree relative • ARVC/D confirmed pathologically or by current Task Force Criteria in second-degree relative
• Familial history (clinical diagnosis based on present criteria)	

Marcus FI Circulation 2010

Beta-blockers titrated to the maximally tolerated dose are recommended as the first-line therapy to improve symptoms in patients with frequent PVC and NSVT.	I	C
ICD implantation is recommended in patients with a history of aborted SCD and haemodynamically poorly tolerated VT.	I	C
Amiodarone should be considered to improve symptoms in patients with frequent PVC or NSVT who are intolerant of or have contraindications to beta-blockers.	IIa	C
Catheter ablation, performed in experienced centres, should be considered in patients with frequent symptomatic PVC or VT unresponsive to medical therapy to improve symptoms and prevent ICD shocks, respectively.	IIa	B
ICD implantation should be considered in ARVC patients who have haemodynamically well-tolerated sustained VT, balancing the risk of ICD therapy, including long-term complications, and the benefit for the patient.	IIa	B
ICD implantation may be considered in patients with one or more recognized risk factors for VA in adult patients with a life expectancy >1 year following detailed clinical assessment that takes into account the lifelong risk of complications and the impact of an ICD on lifestyle, socioeconomic status and psychological health	IIb	C
D risk.	IIb	C

ESC Guidelines 2015
VT and SD prevention