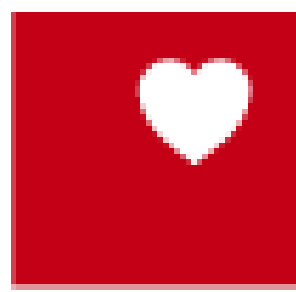




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INSTITUTE FOR CLINICAL
AND EXPERIMENTAL MEDICINE
DEPARTMENT OF CARDIOLOGY

Cardioneuroablation for AVB

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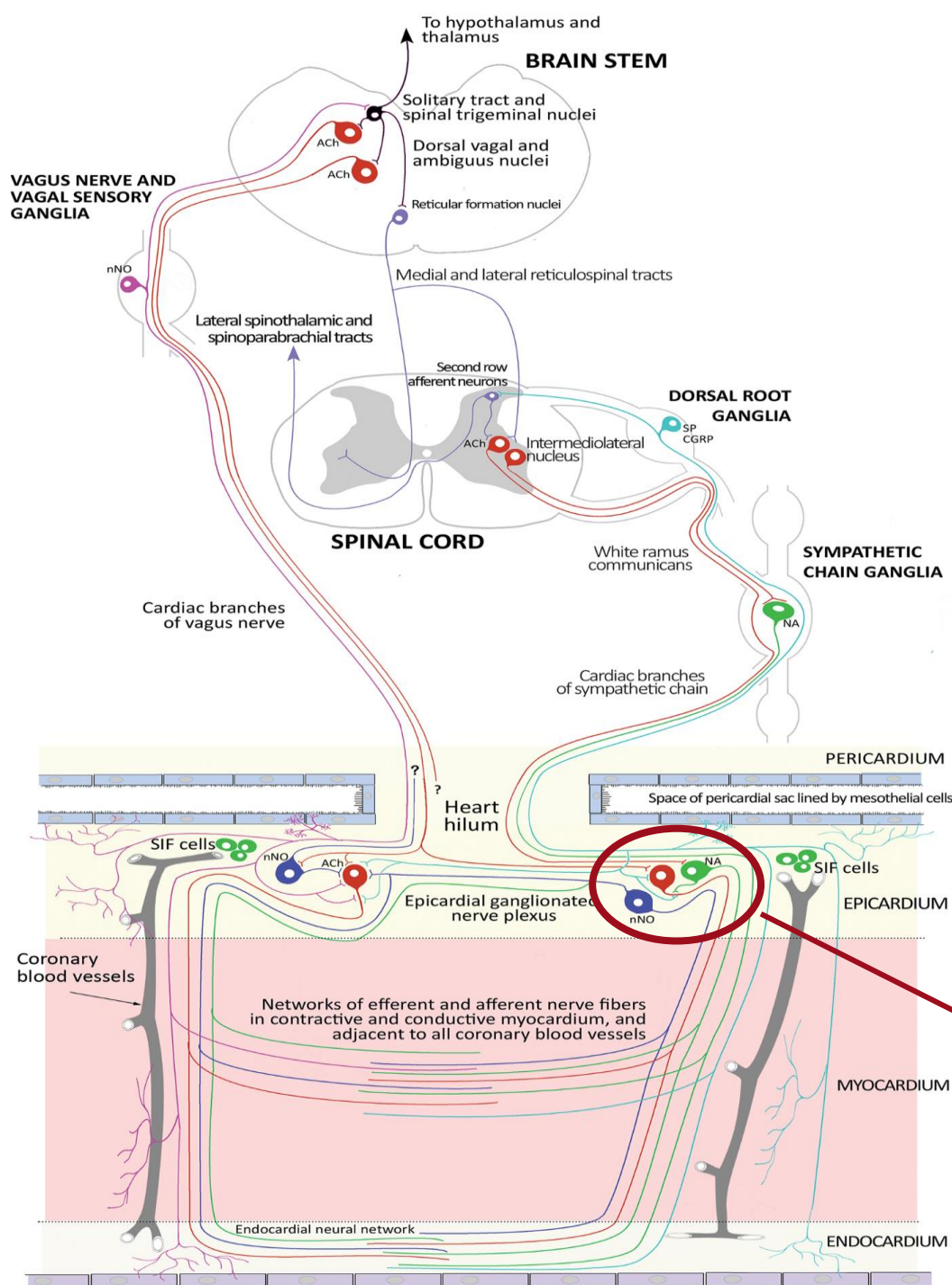
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Disclosures

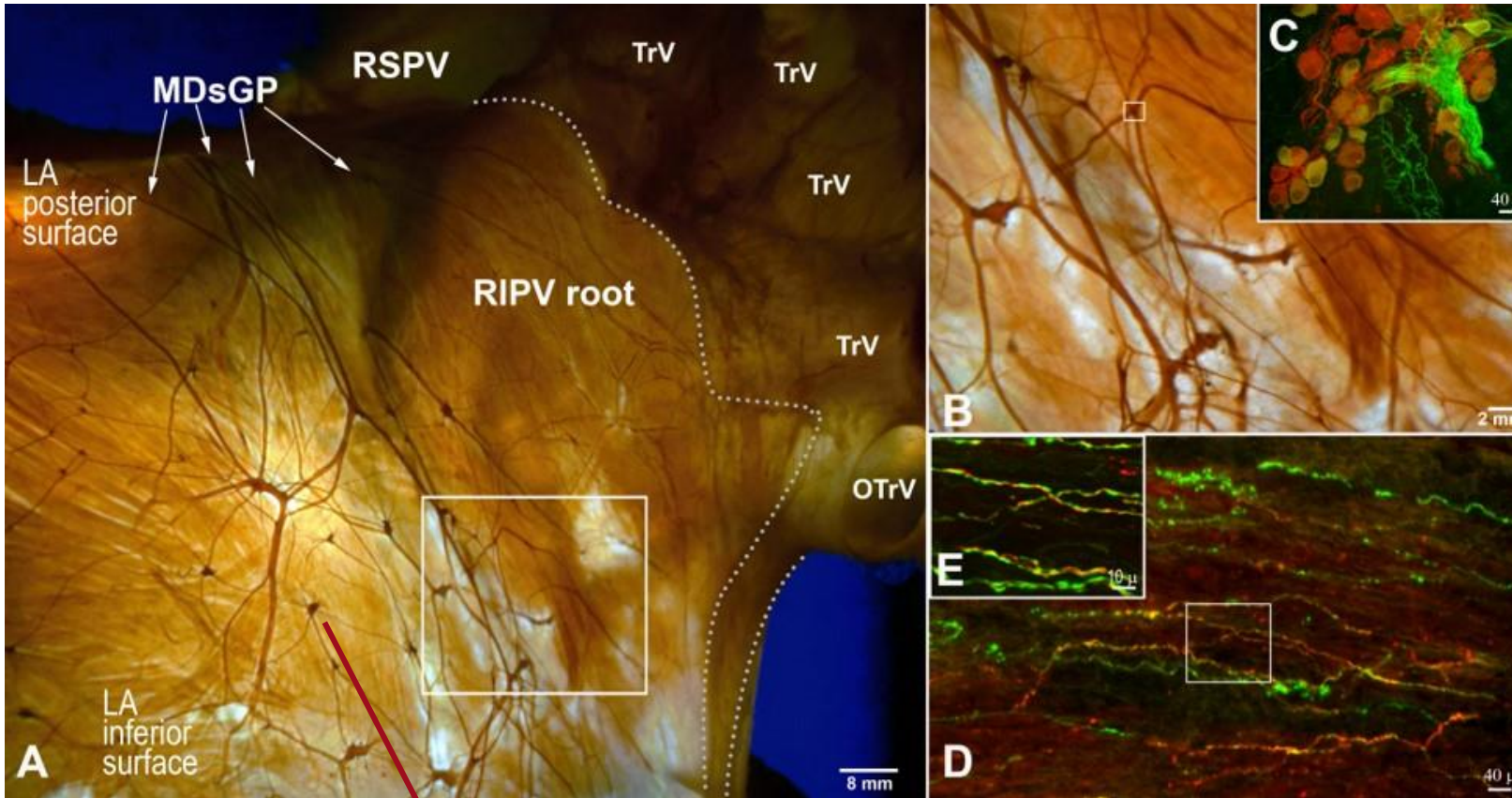
- I have nothing to declare relevant to the topic in discussion



- **Cardioneuroablation:** catheter based autonomic modulation of intrinsic cardiac nerve system
- ICNS contains both efferent **parasympathetic** and **sympathetic** motor neurons, afferent sensory neurons and local circuit neurons/interneurons
- Although most autonomic ganglia are embedded within the epicardium, there is a highly dense network of efferent nerve fibers at the myocardial and endocardial levels.

Epicardial ganglia

Macrophotograph of the posteroinferior surface of LA with the RIPV stained histochemically for acetylcholinesterase



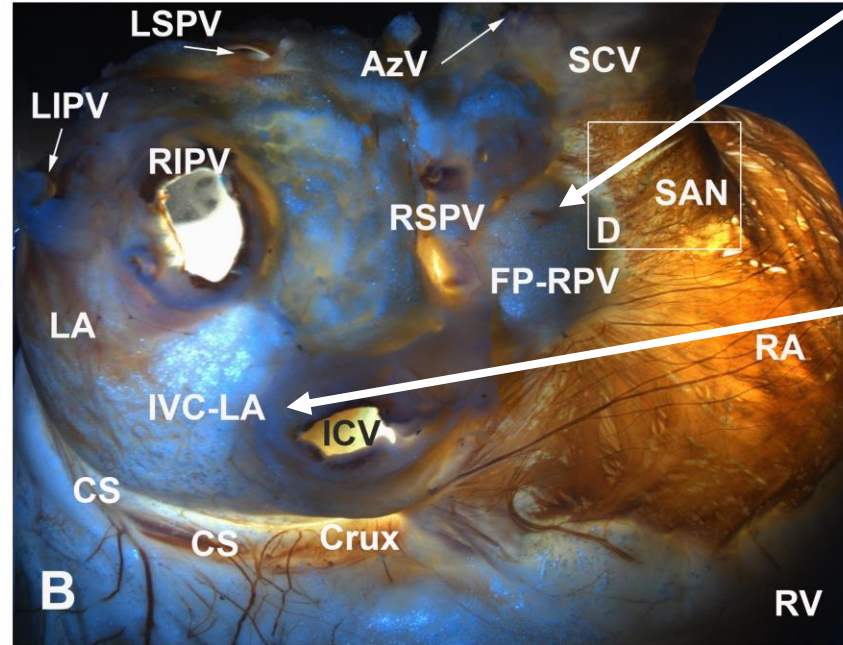
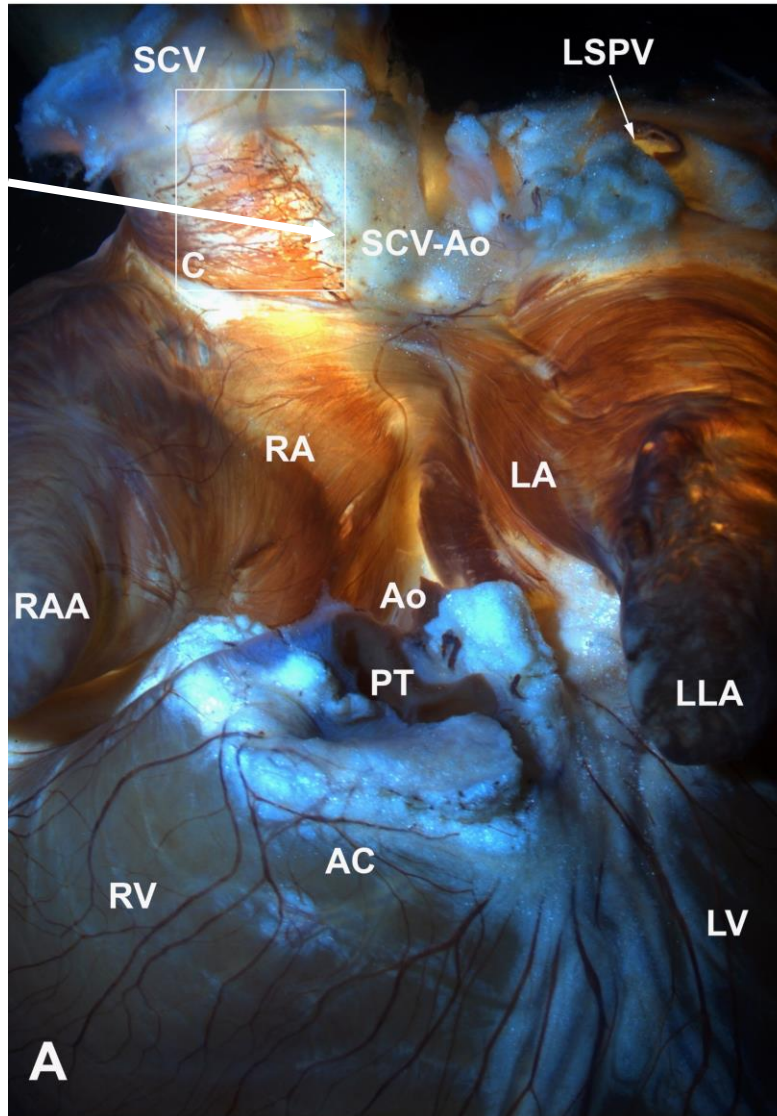
Epicardial ganglia

The concept of GP defines grouping epicardial ganglia in different sites

Autonomic innervation in animals

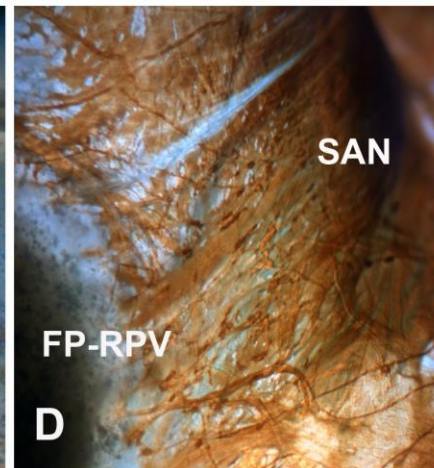
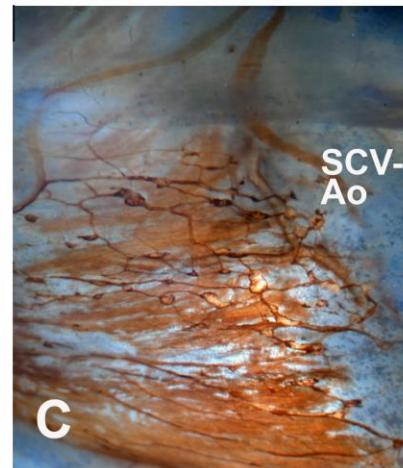
Epicardial Fat Pads Nomenclature

Ao-SVC
fat pad



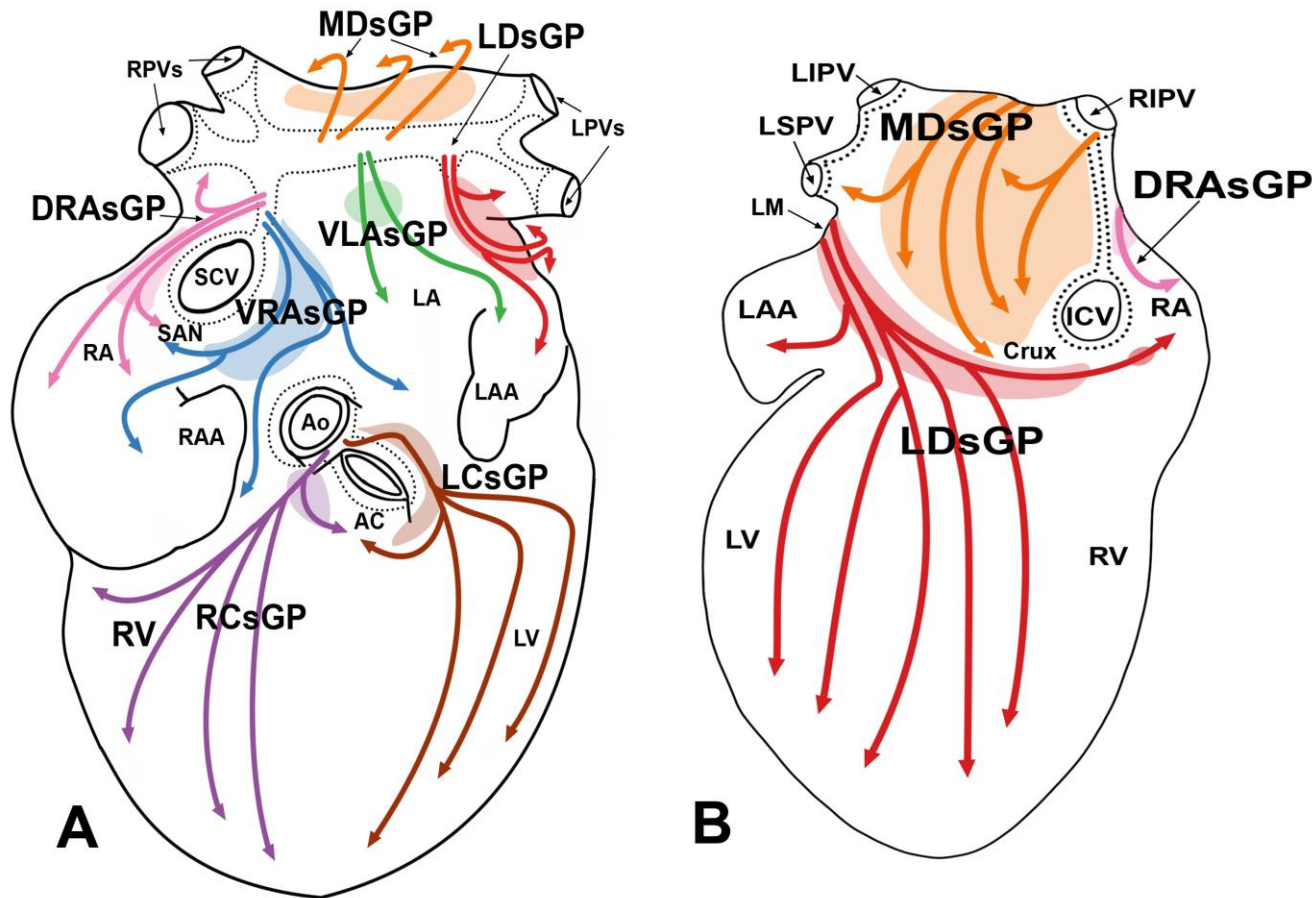
RPV-RA fat
pad

IVC-LA fat
pad

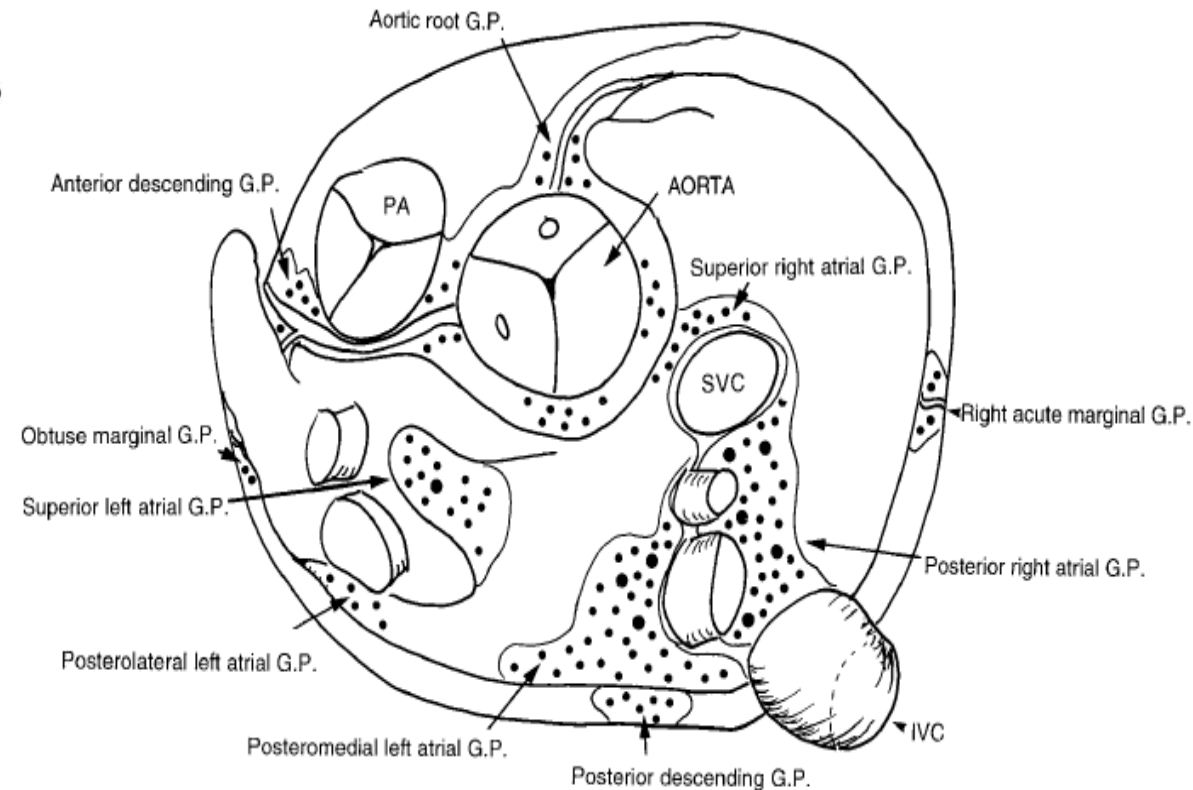


Anatomical organization in human

Intrinsic CANS consists of epicardial ganglia and neuronal extensions of these ganglia on the human atria and ventricles (Ganglionated subplexuses)



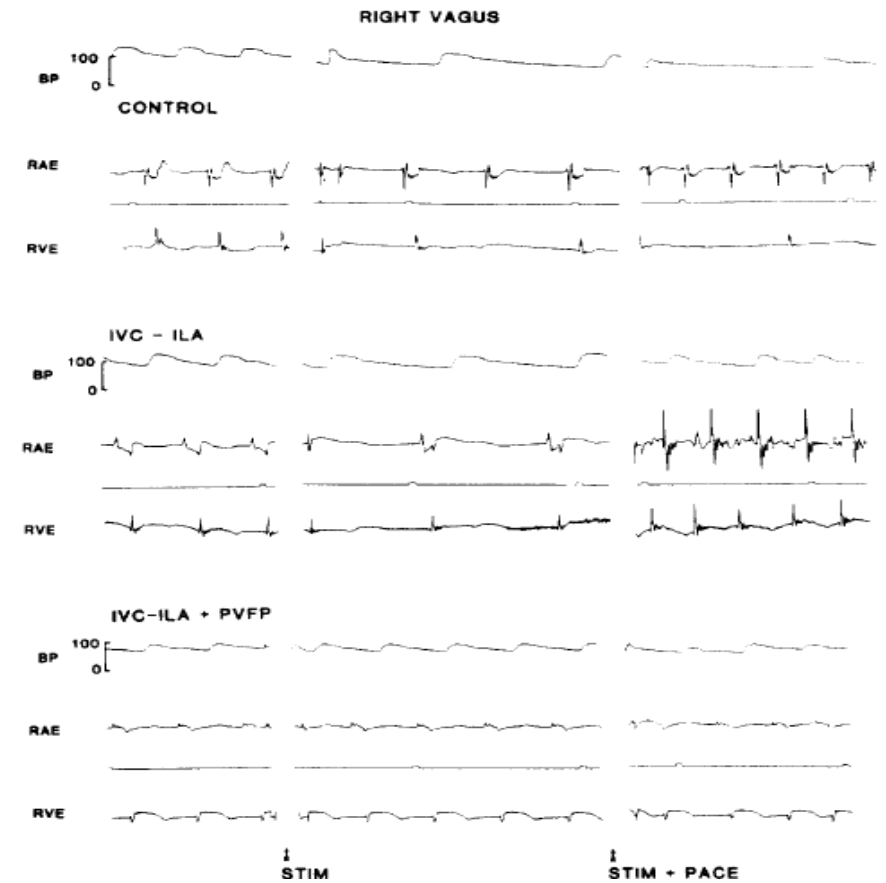
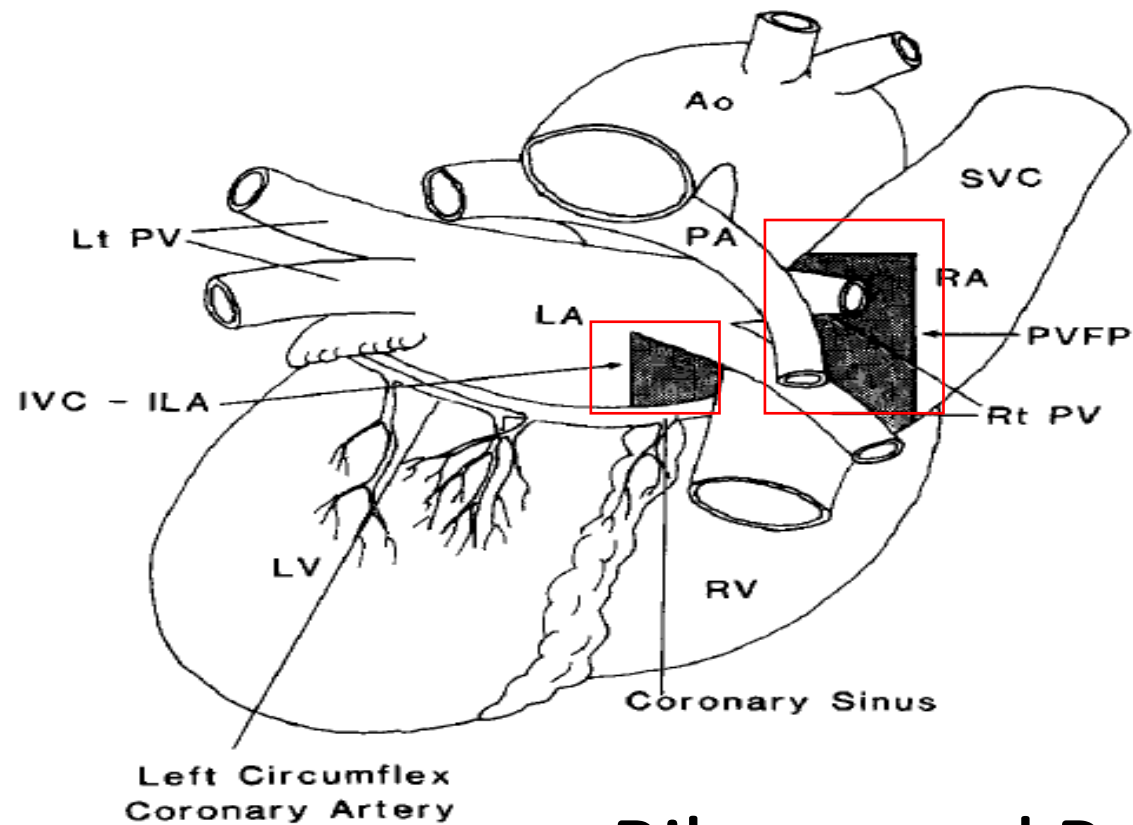
Aksu T, et al. Unpublished work



Armour J, et al. THE ANATOMICAL RECORD 247:289–298 (1997)

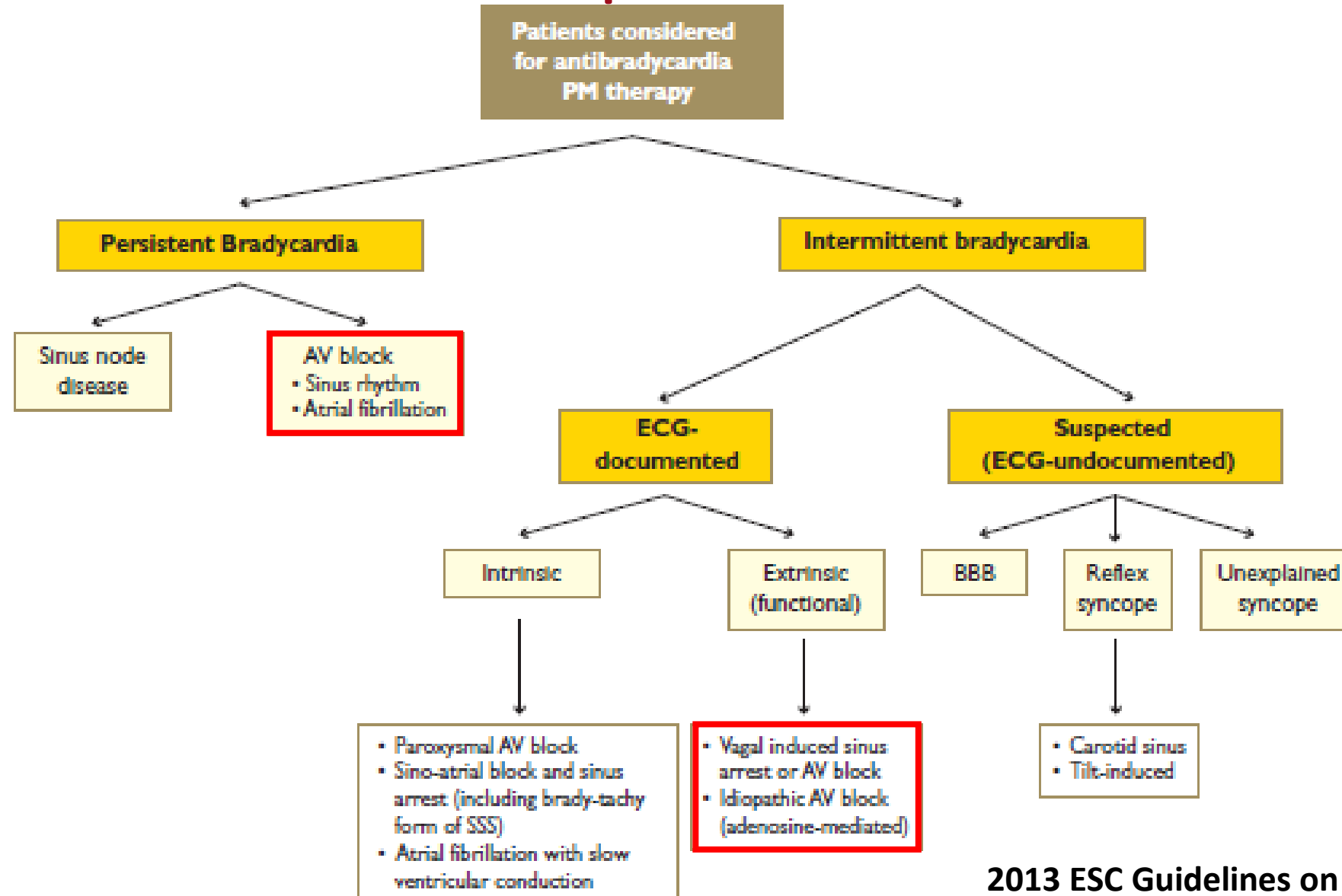
Selective innervation of SAN and AVN in animal experiments

The monkey



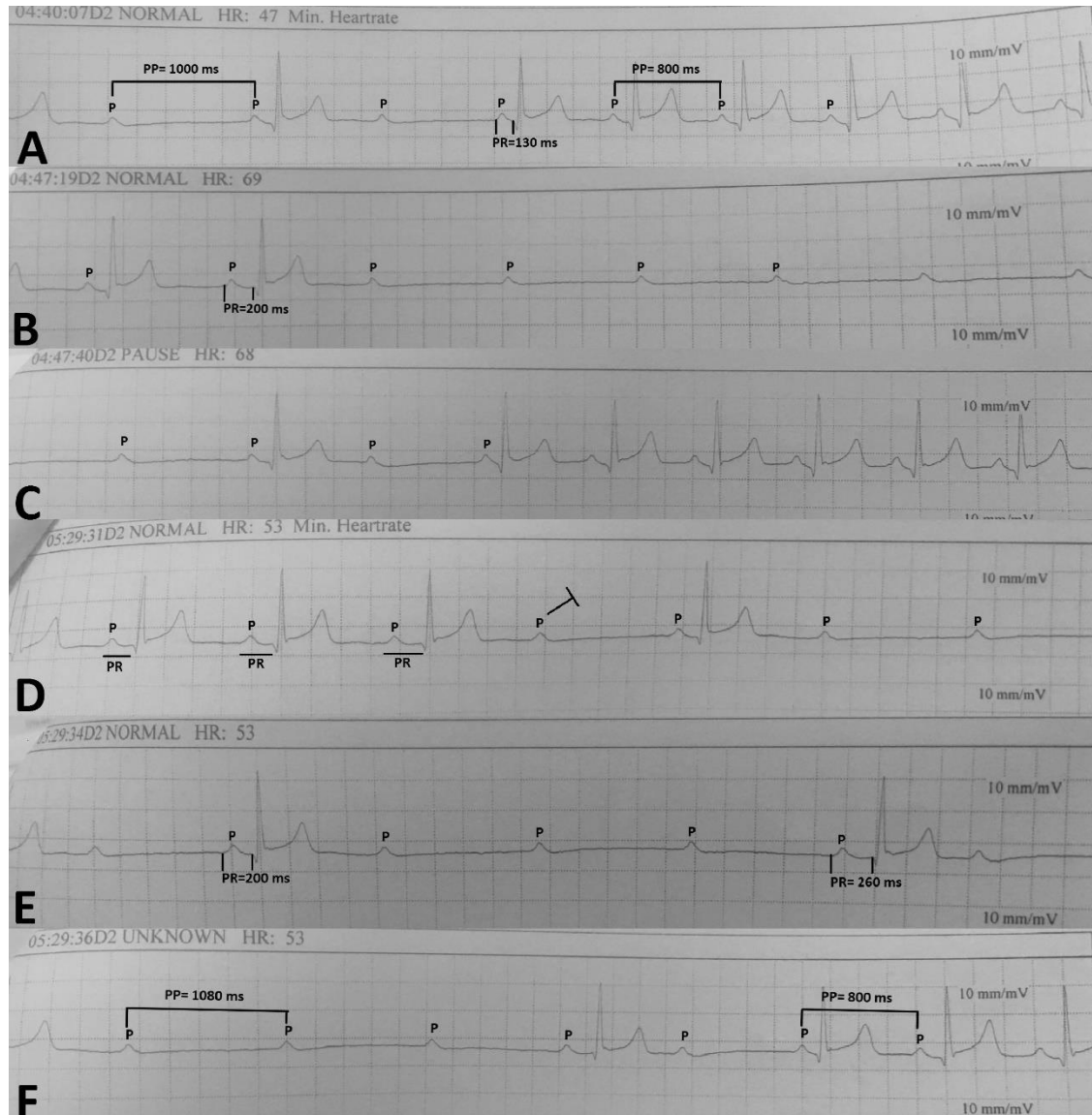
Bilman and Randall

Classification of bradyarrhythmias based on the patients' clinical presentation



Paroxysmal AVB

HOLTER RECORDINGS of CASE



***ECG characteristics before, during, and after the episode should be carefully examined.**

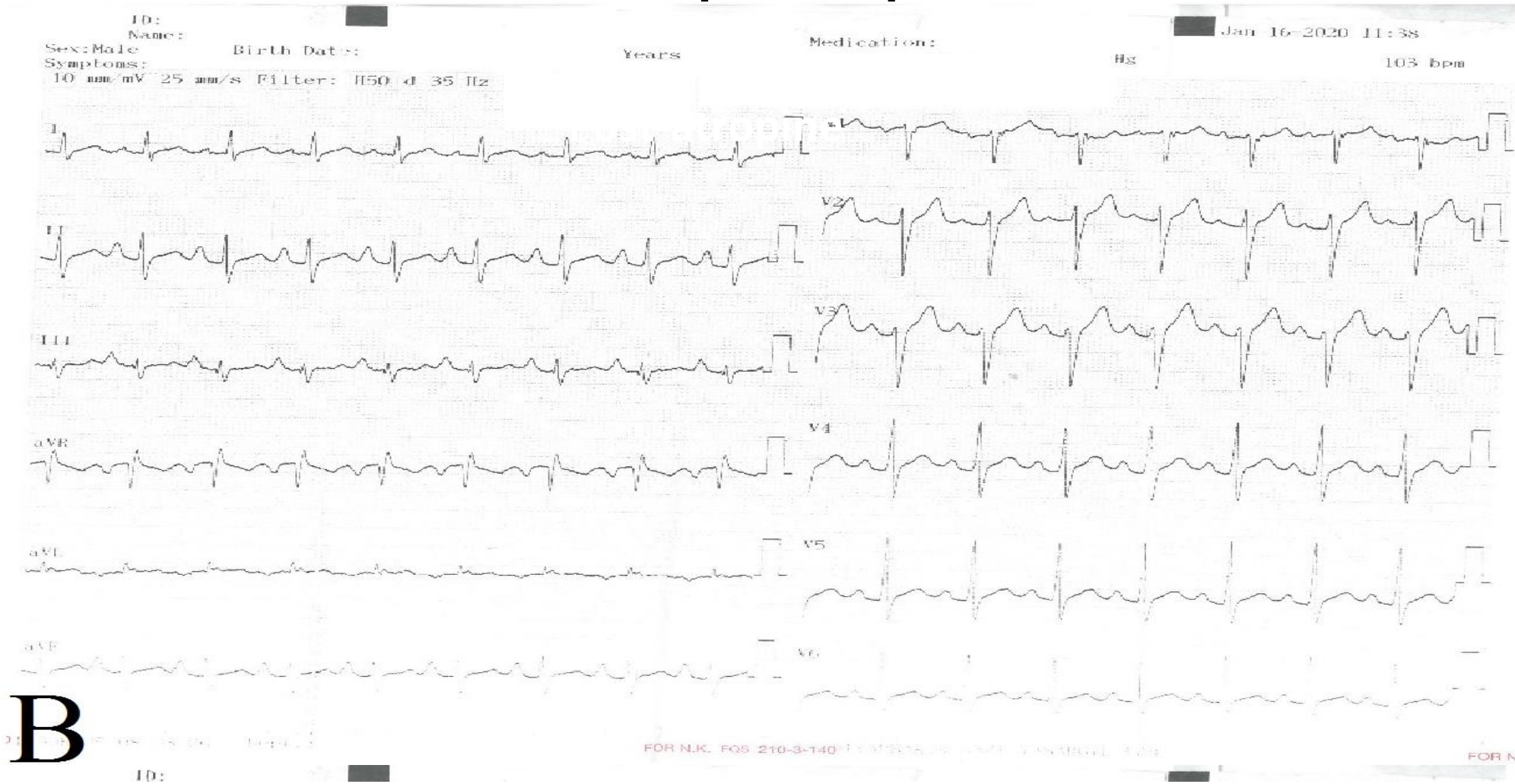
***A clear sinus rate slowing during episode**

***PR prolongation before AVB**

***Contrary, PR remains unchanged and sinus rate increases or does not change in intrinsic PAVB.**

Are all persistent AVB intrinsic?

Evaluate atropine response



CLINICAL DATA on AVB



Latin American
Heart Rhythm Society

virtual

3rd Scientific
Sessions

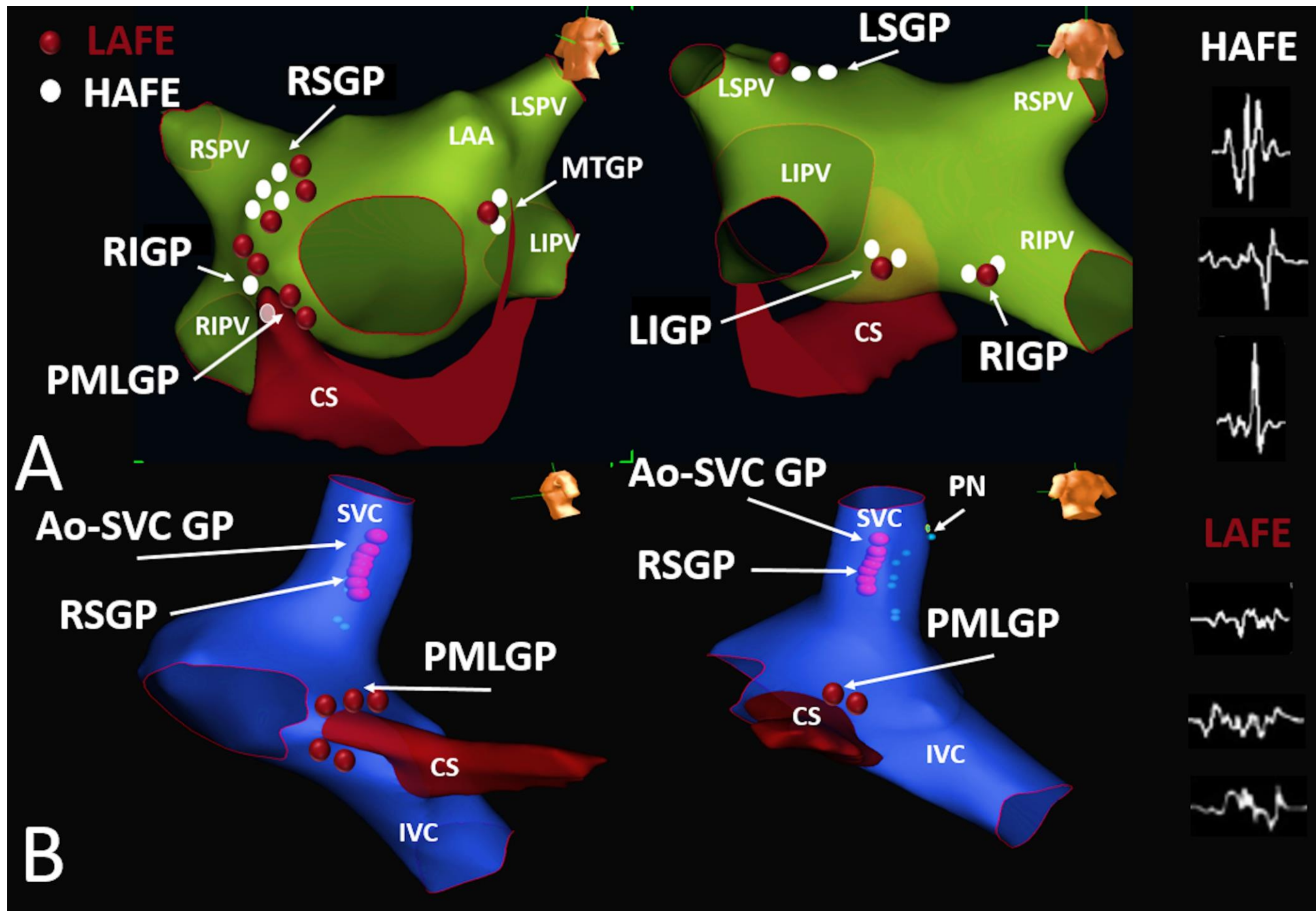
Cardioneuroablation For Atrioventricular Block: A Single Center Experience

Authors

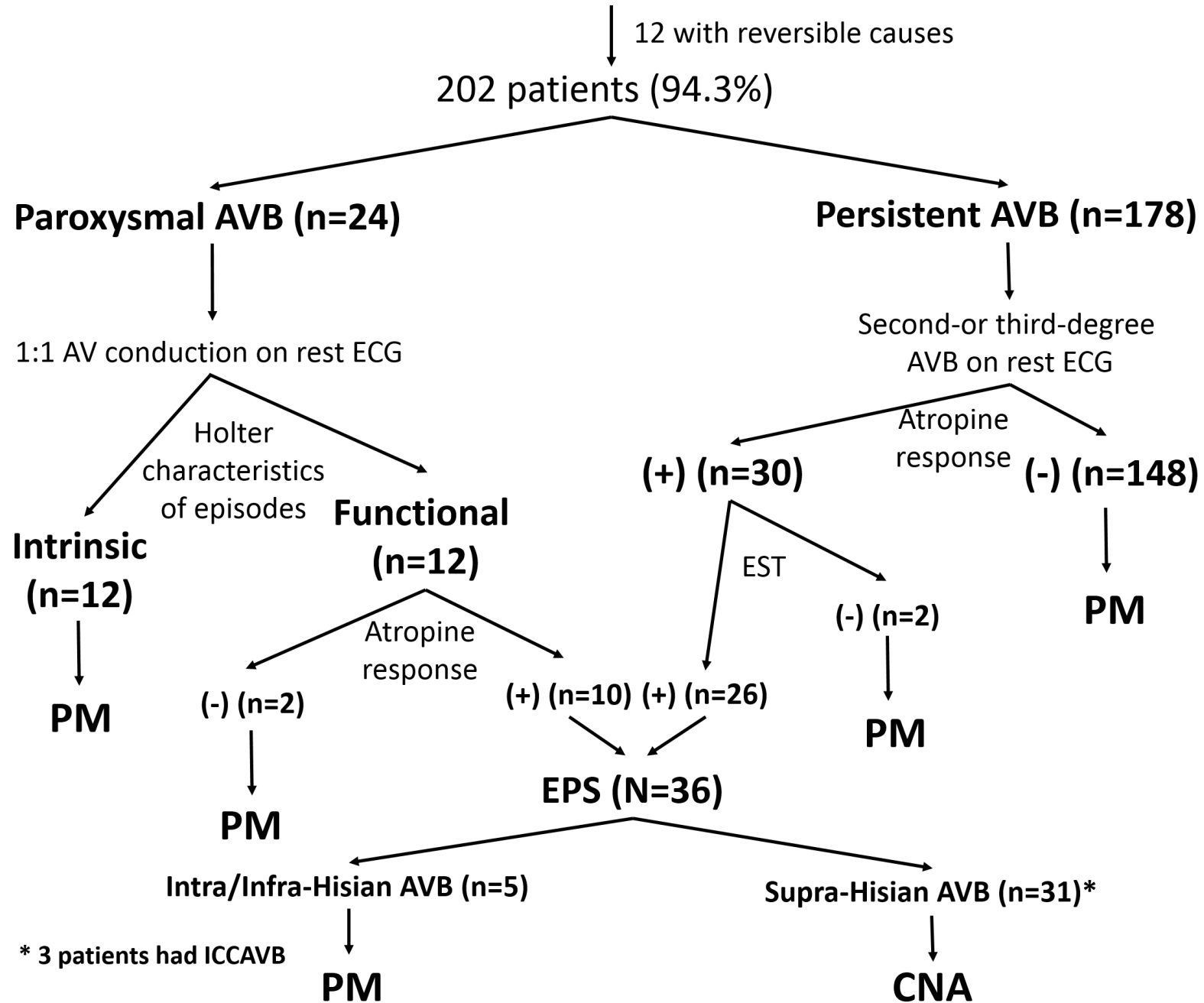
Tolga Aksu¹, Serdar Bozyel¹, Kivanc Yalin², Rakesh Gopinathannair³

Affiliations

¹ Kocaeli Derince Training and Research Hospital, Kocaeli, Turkey ² Istanbul-Cerrahpasa University Hospital, Istanbul, Turkey ³ Kansas City Heart Rhythm Institute and Research Foundation, Kansas City, United States



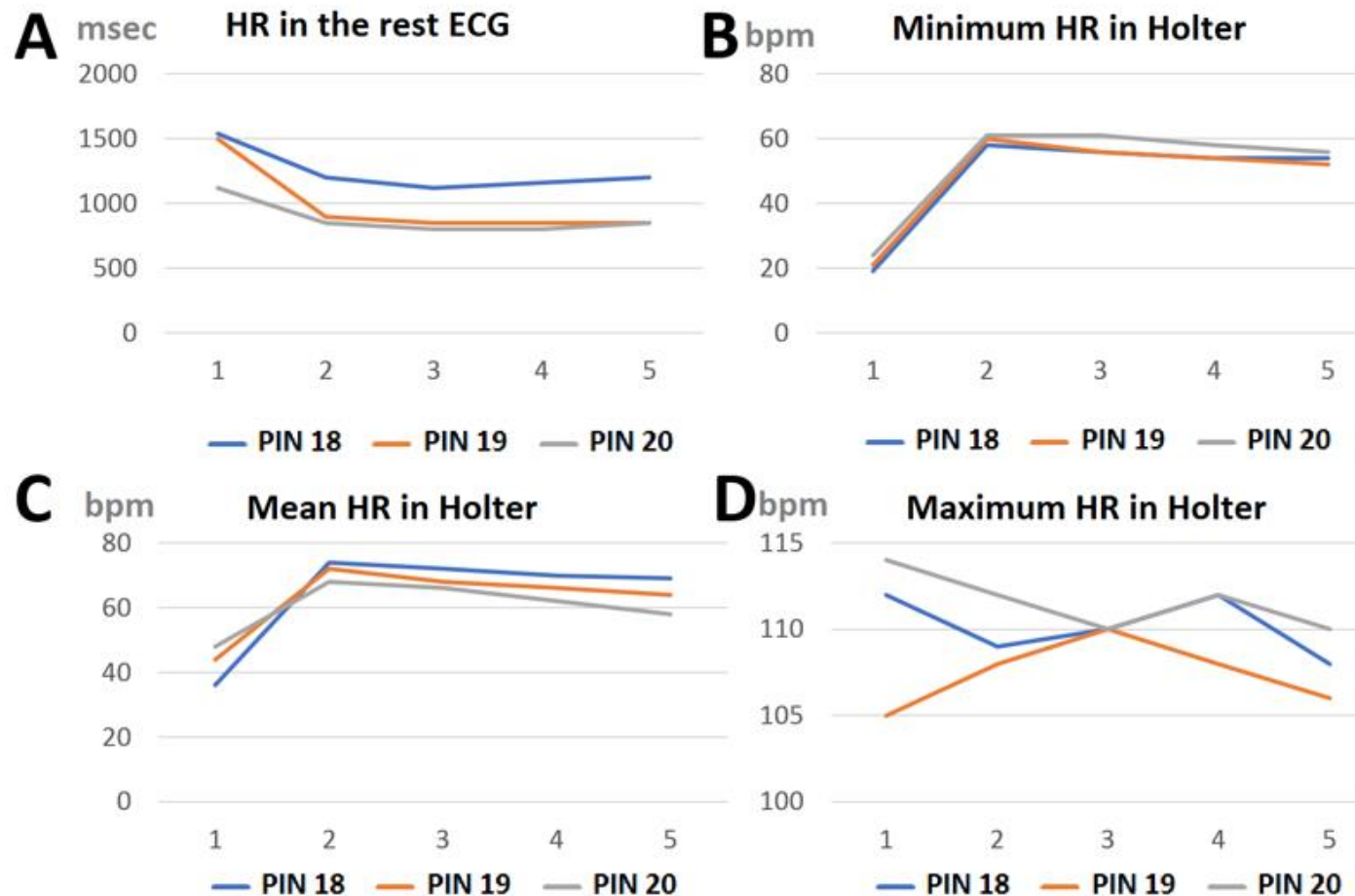
214 Patients considered for antibradycardia therapy



* 3 patients had ICCAVB

Isolated Congenital Complete AVB

HR values of patients with ICCAVB



Inclusion criteria are an average heart rate less than 50 bpm or abrupt symptomatic pauses in ventricular rate which were 2 or more times the baseline cycle length on Holter recordings

Case-1



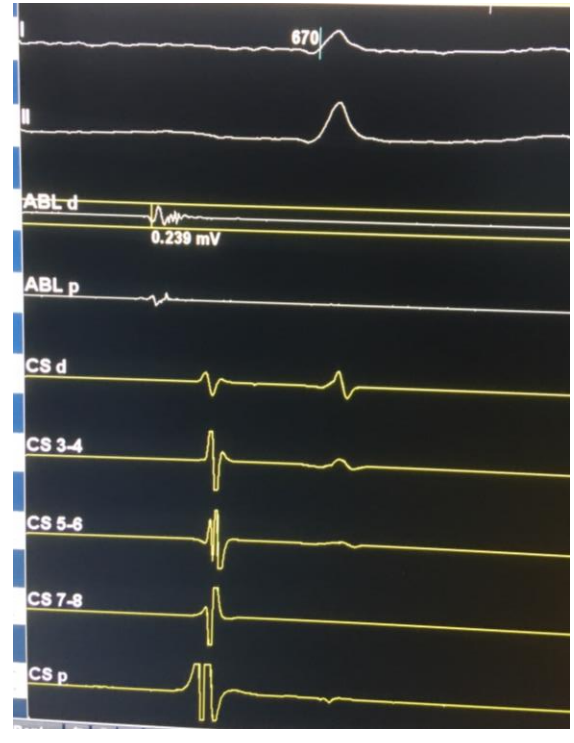
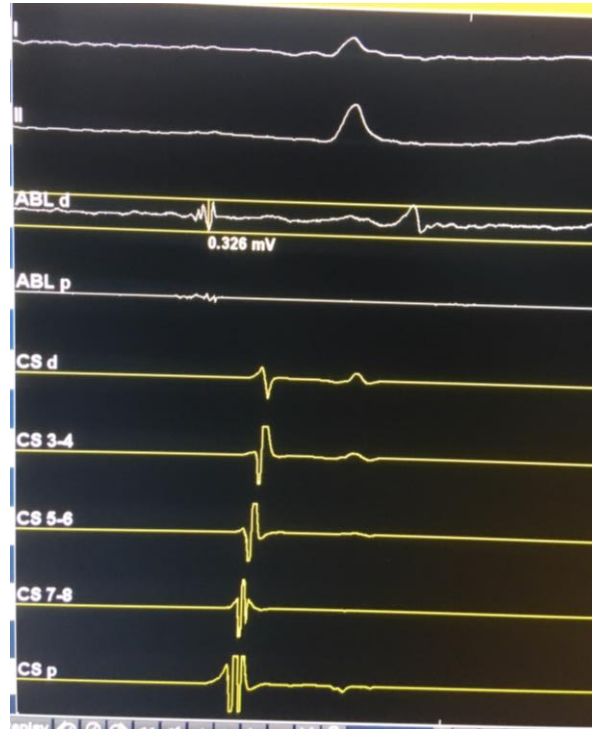
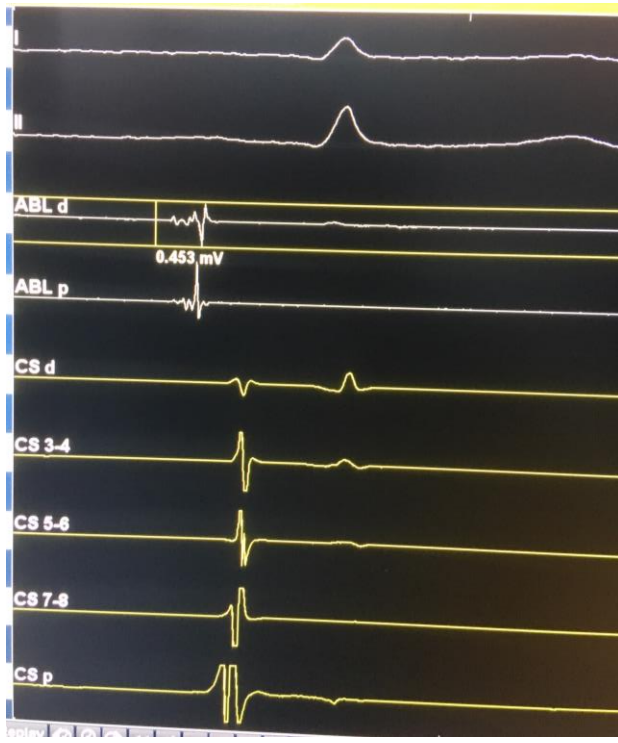
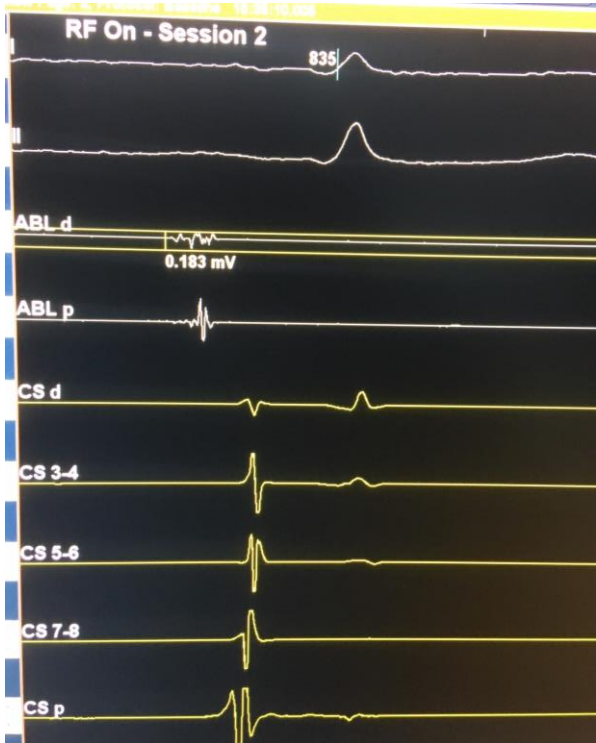
Map RA and LA quickly by using multipolar catheters

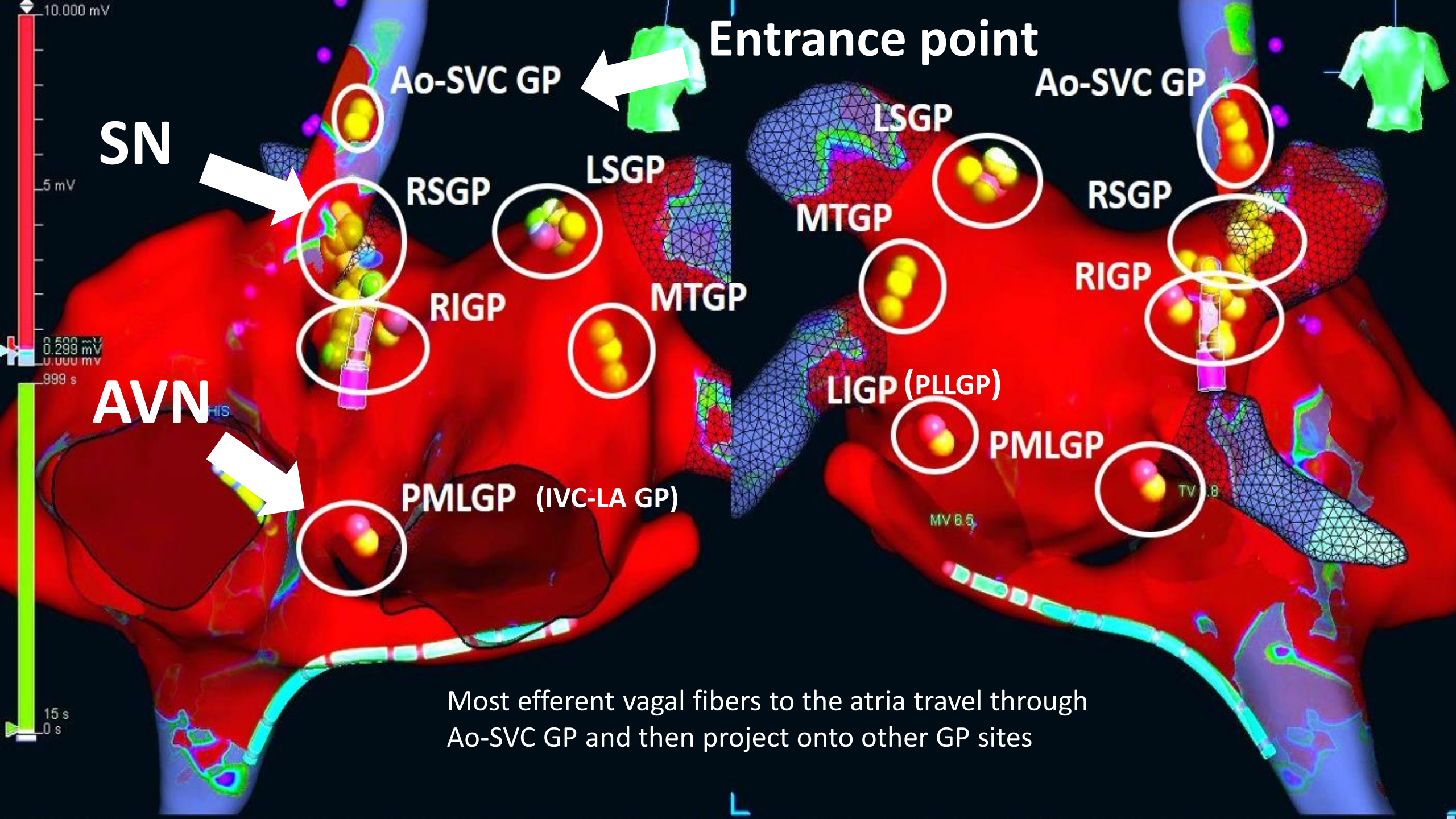


Real-time EGM examples



Real-time EGM examples





Entrance point

Ao-SVC GP

Ao-SVC GP

SN

RSGP

LSGP

LSGP

MTGP

RSGP

RIGP

MTGP

RIGP

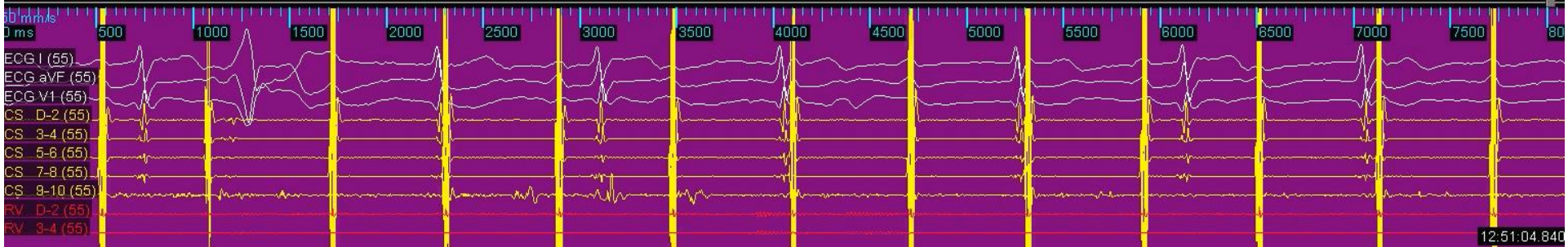
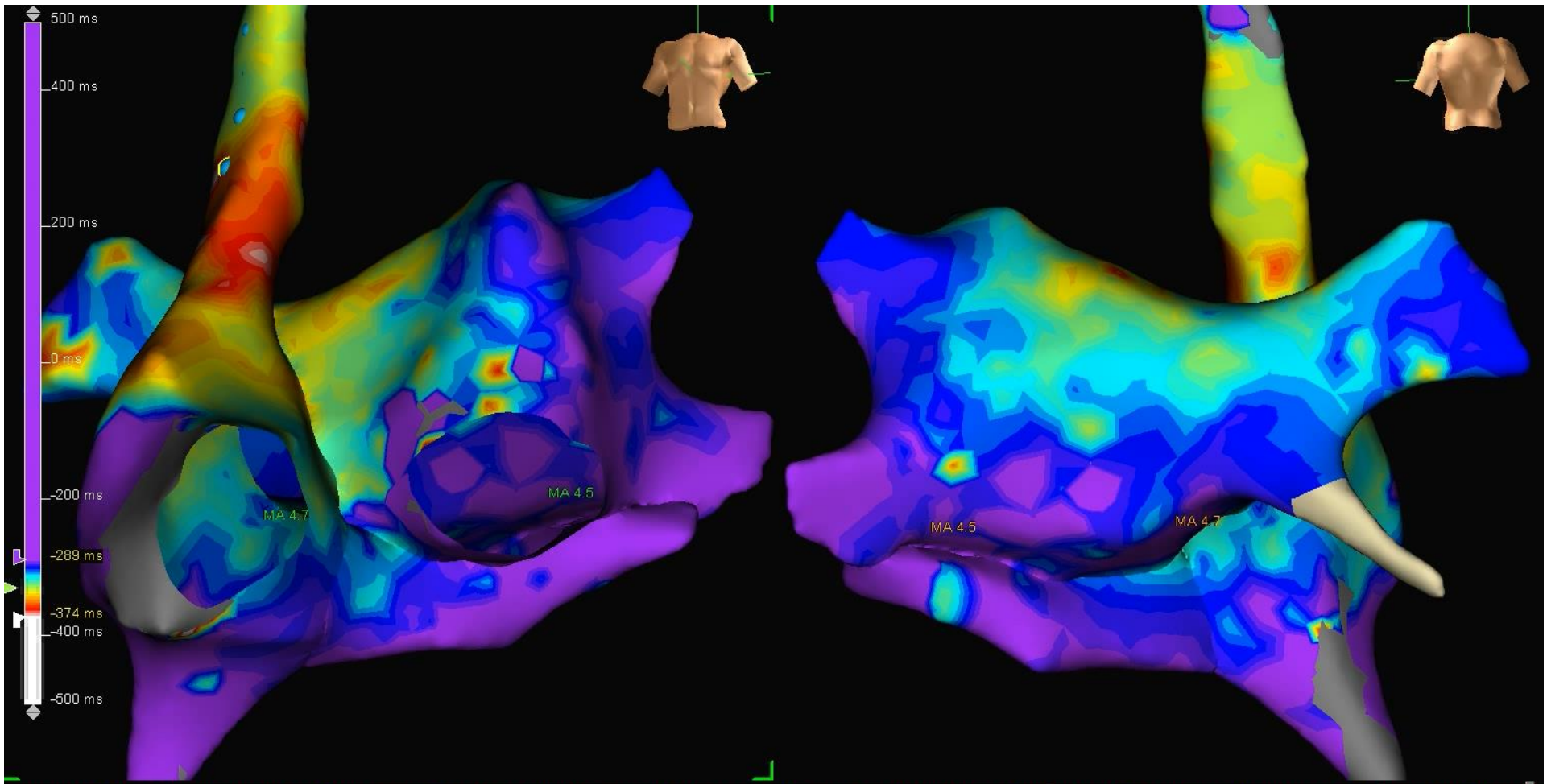
AVN

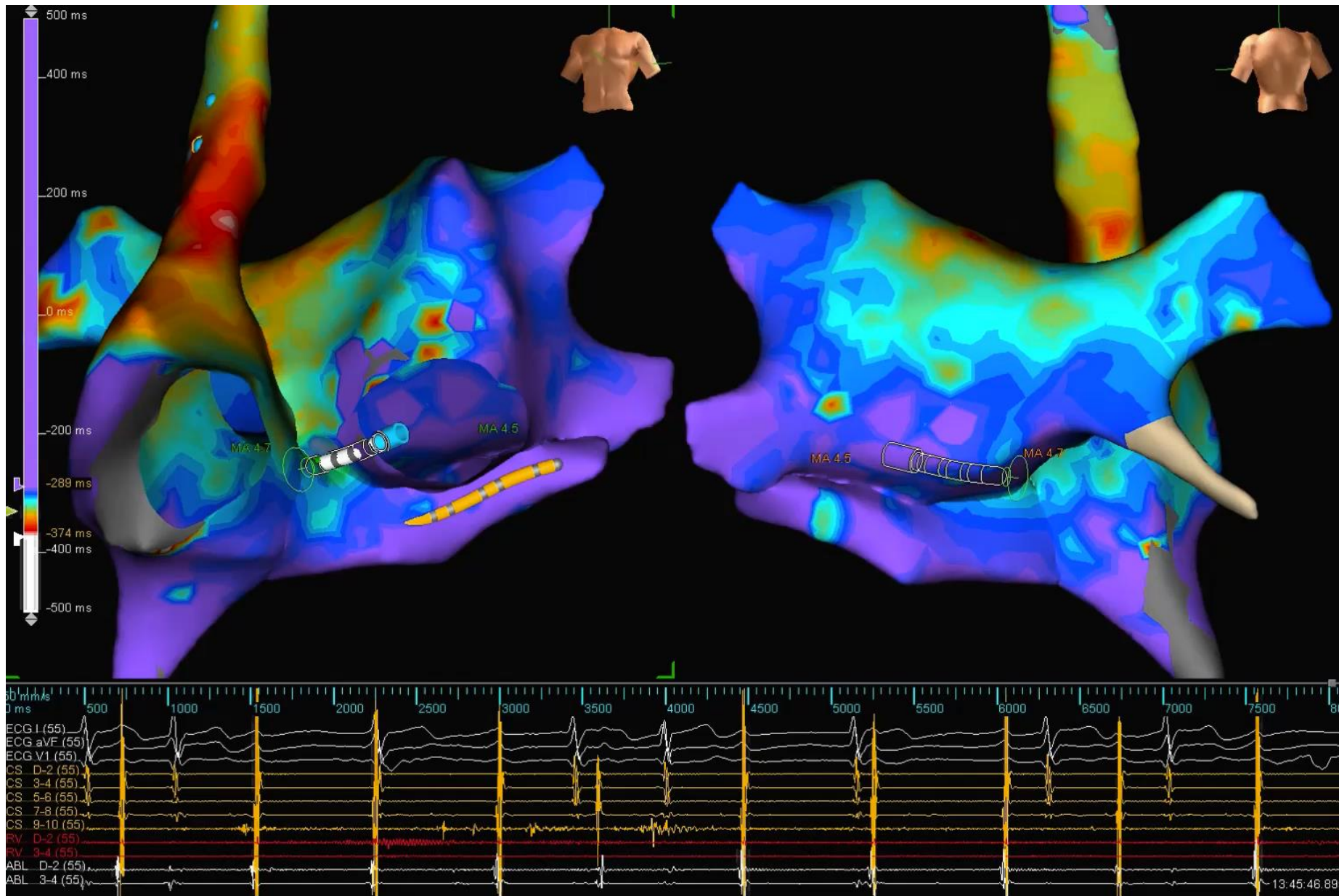
LIGP (PLLGP)

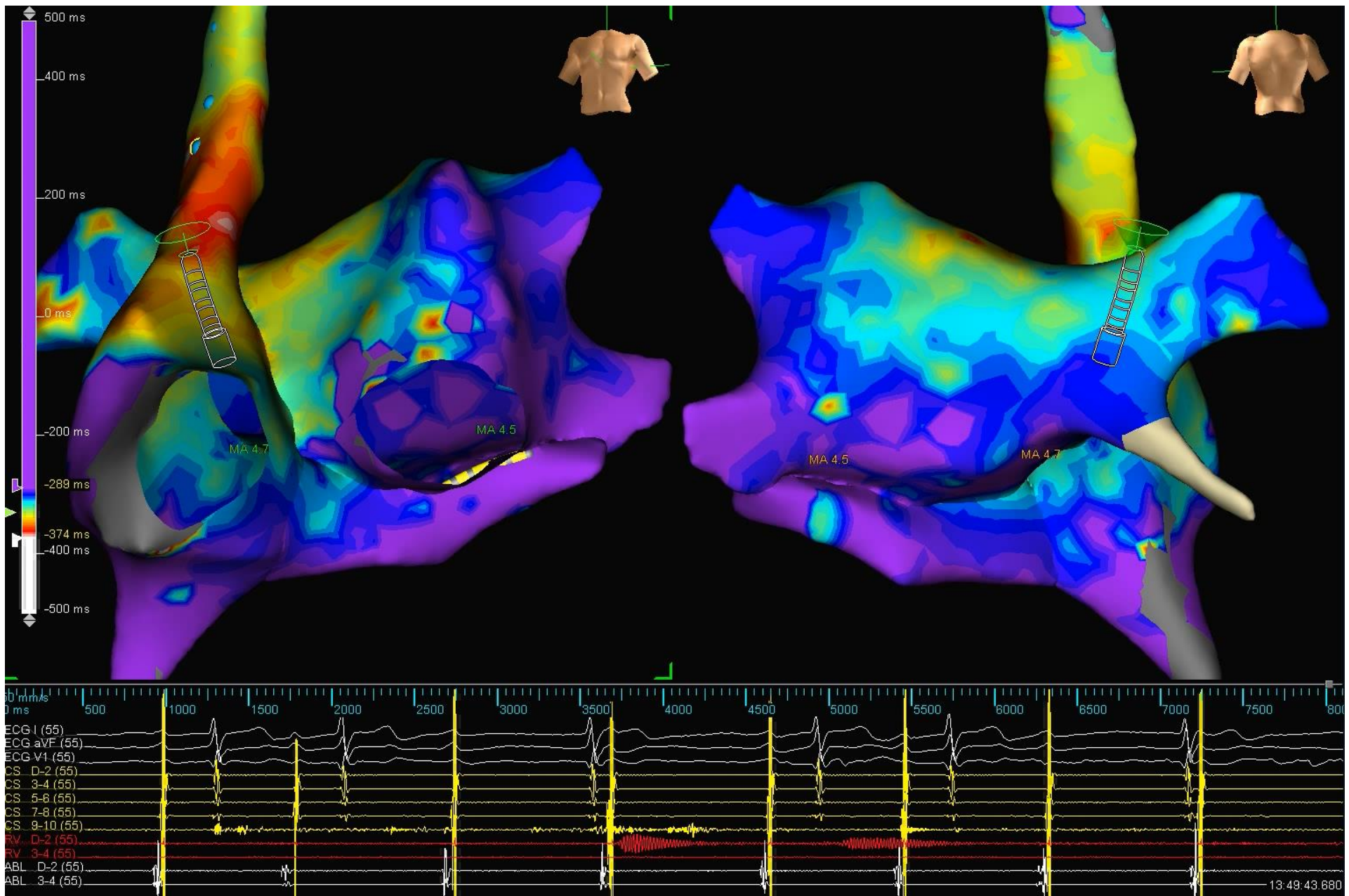
PMLGP

PMLGP (IVC-LA GP)

Most efferent vagal fibers to the atria travel through Ao-SVC GP and then project onto other GP sites

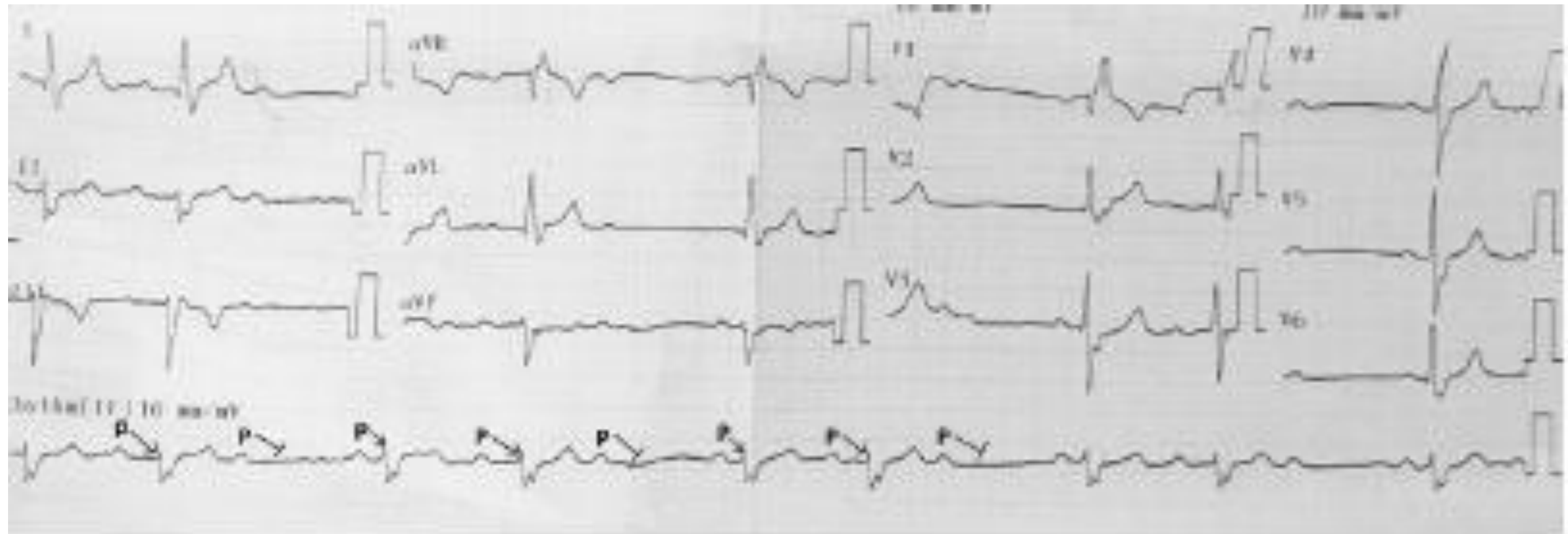




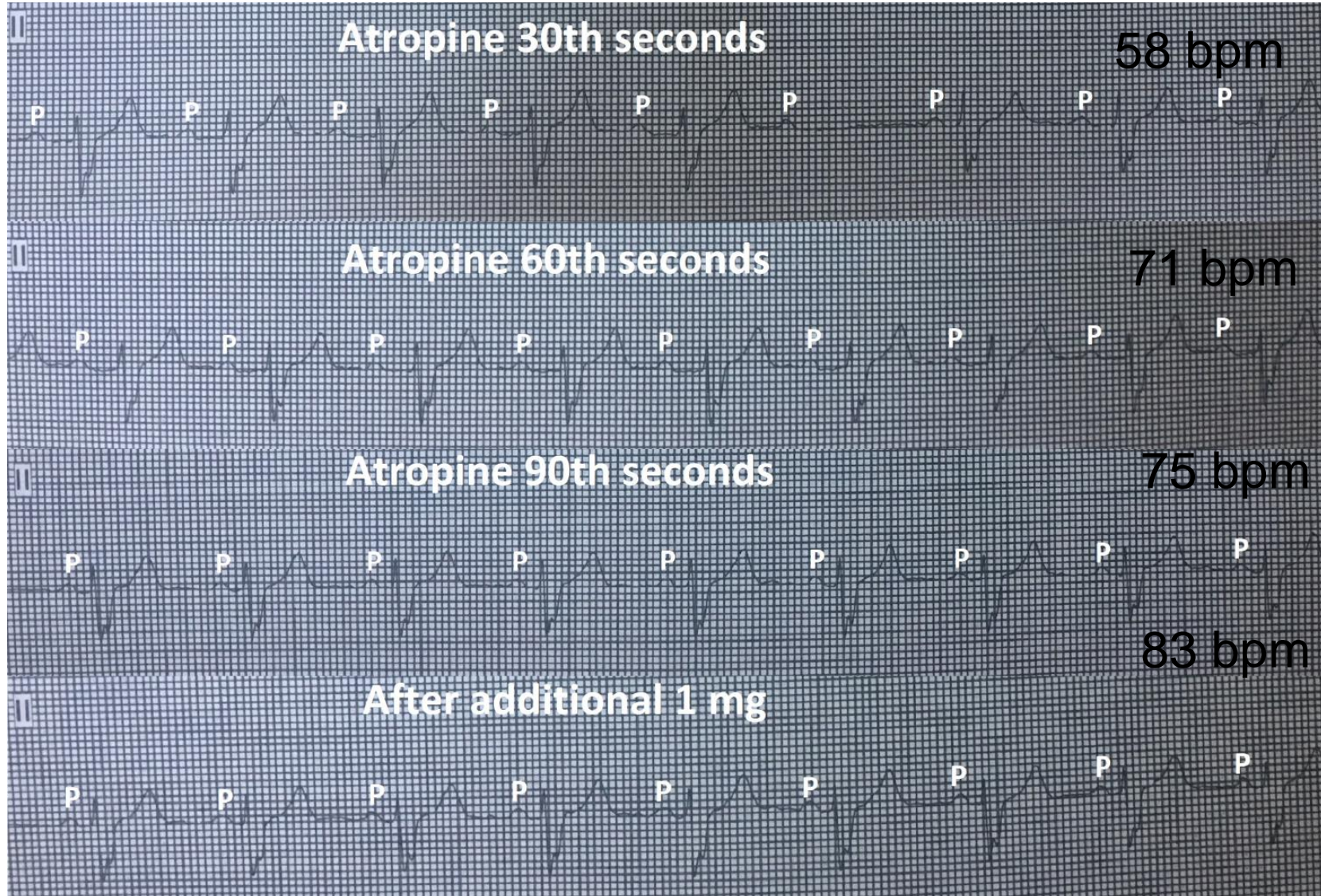


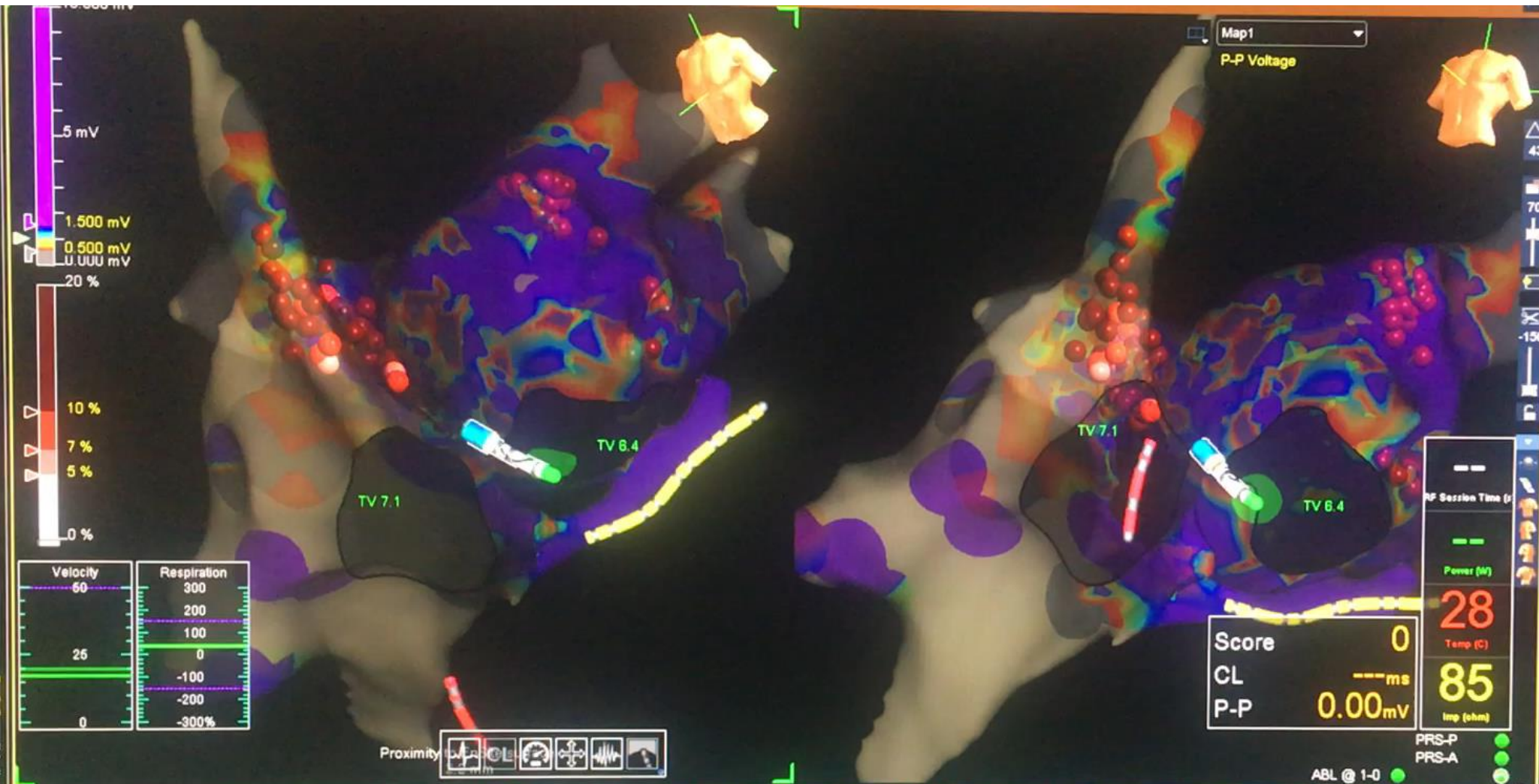
Case-2

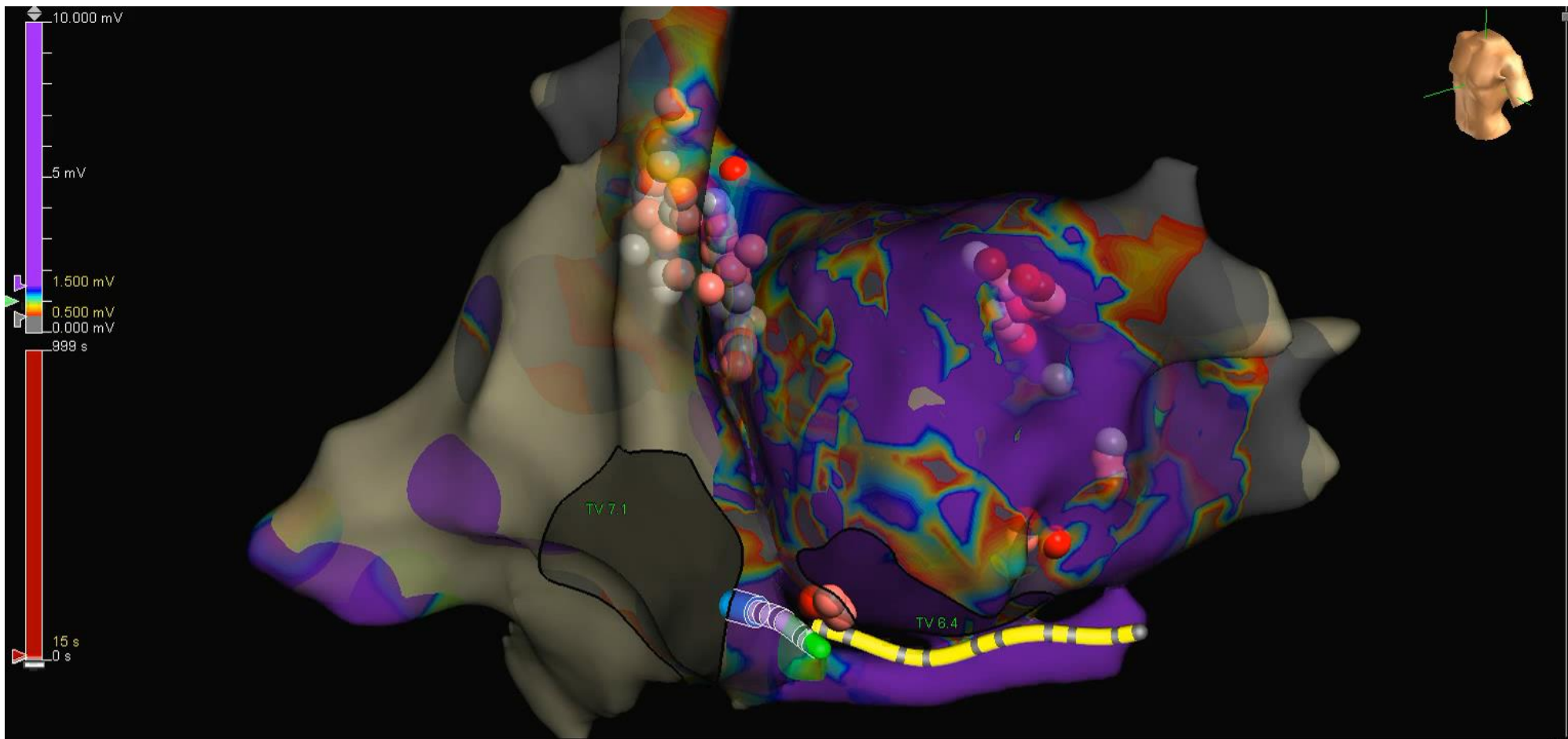
Rest ECG

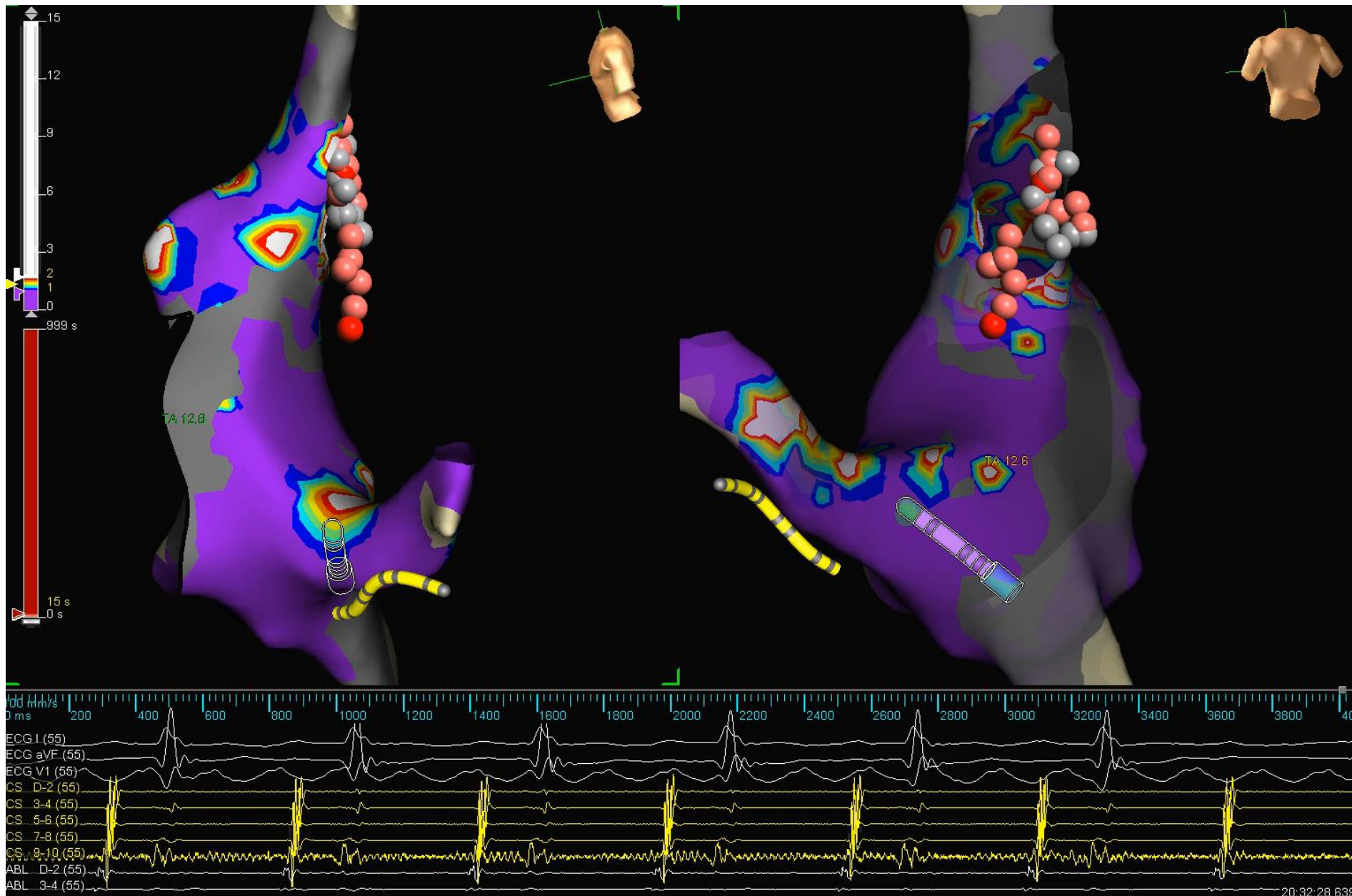


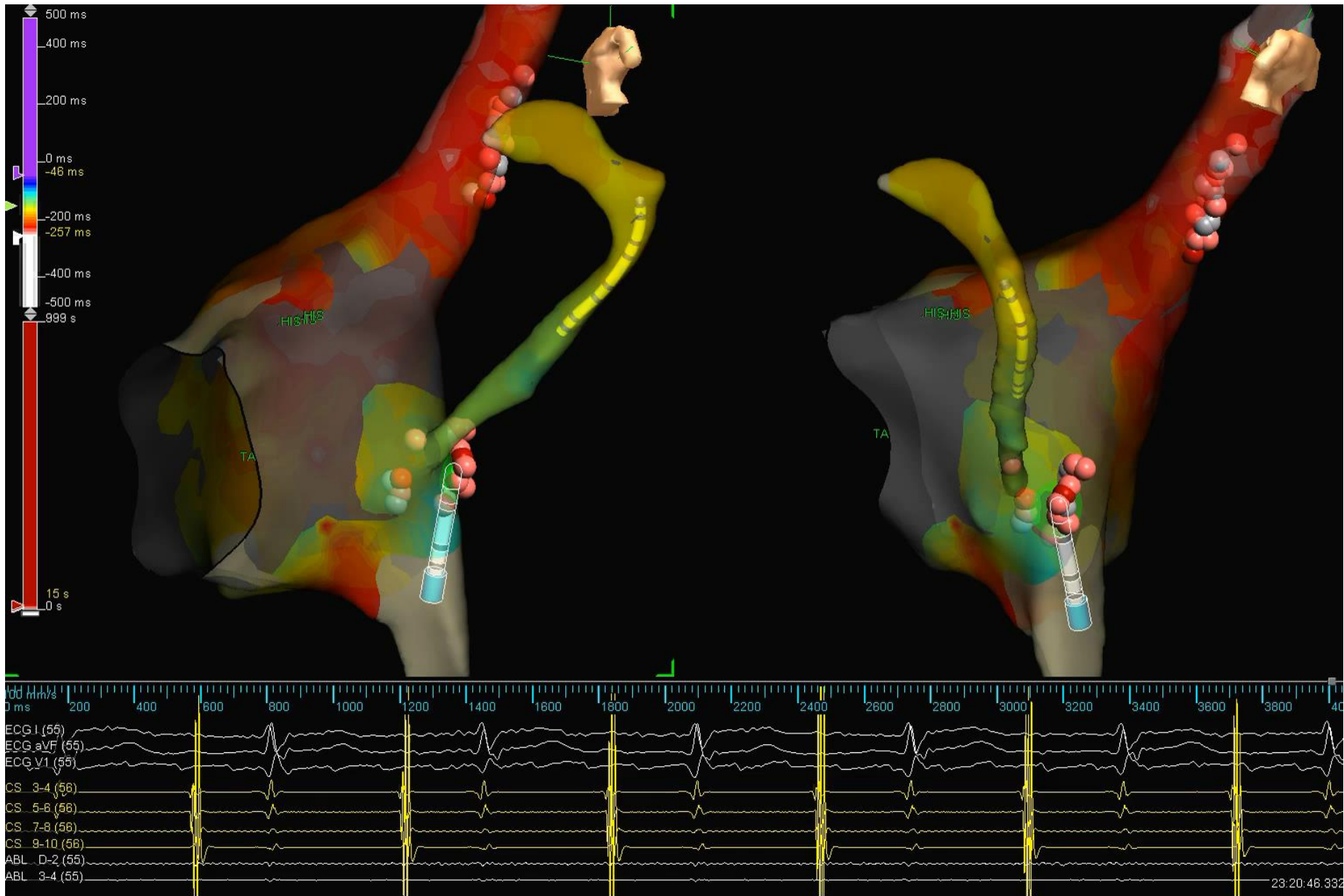
Atropine response



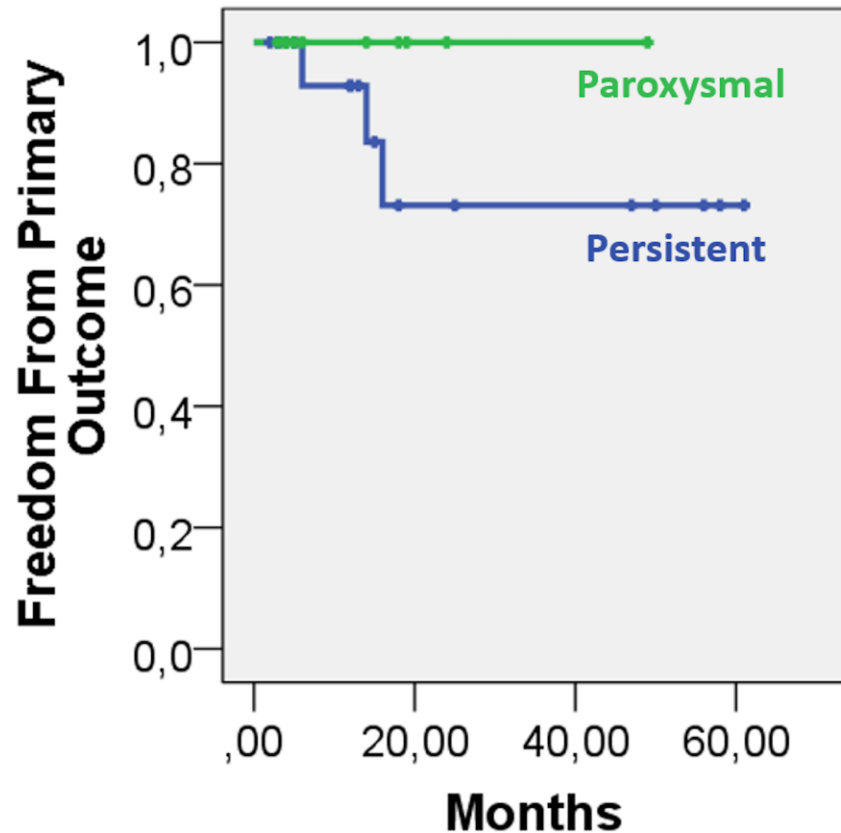








Take home messages



- (1) In a highly selective cohort of FAVB, CNA is associated with substantial and durable reduction in recurrence of AVB episodes during medium-term follow-up
- (2) Results might be better in paroxysmal AVB
- (3) Both bi-atrial or left-sided and right-sided CNA have excellent and comparable acute success rate
- (4) PMLGP might be a valuable target for elimination of atrioventricular nodal vagal innervation in CNA