Επεμβατική Αντιμετώπιση Αρρυθμιών

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Ηλεκτροφυσιολογίας/Βηματοδότησης,
Ερρίκος Ντυνάν Hospital Center

ESC European Society of Cardiology
European Heart Journal (2017) **0**, 1–9
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CLINICAL RESEARCH
Arrhythmia/electrophysiology

Temporal trends in atrial fibrillation recurrence rates after ablation between 2005 and 2014: a nationwide Danish cohort study

Timetrends in risk of recurrent atrial fibrillation

Year	Events / patient (%)	Odds Ratios	pValue
2005-2006	307 / 676 (45)	ref.	ref
2007-2008	260 / 667 (39)	0.75 (0.61-0.94)	0.015
2009-2010	395 / 973 (41)	0.80 (0.66-0.98)	0.034
2011-2012	467 / 1,243 (38)	0.74 (0.61-0.90)	0.002
2013-2014	575 / 1,833 (31)	0.57 (0.47-0.68)	<0.001

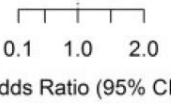
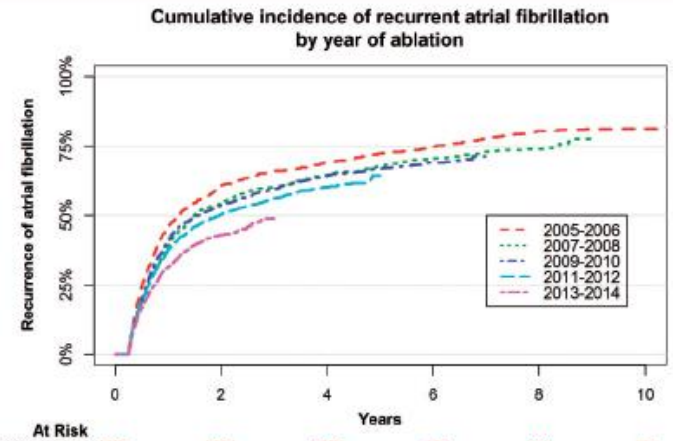


Figure 2 Time trends in recurrent atrial fibrillation 1 year after first time ablation. Adjusted for age, sex, duration of atrial fibrillation, hypertension, heart failure, diabetes mellitus, vascular disease, chronic kidney disease, cardioversion 1 year prior to ablation. CI, confidence interval.



At Risk						
2005-2006	676	259	200	160	121	57
2007-2008	667	302	228	185	70	0
2009-2010	973	445	336	127	0	0
2011-2012	1243	616	206	0	0	0
2013-2014	1833	476	0	0	0	0

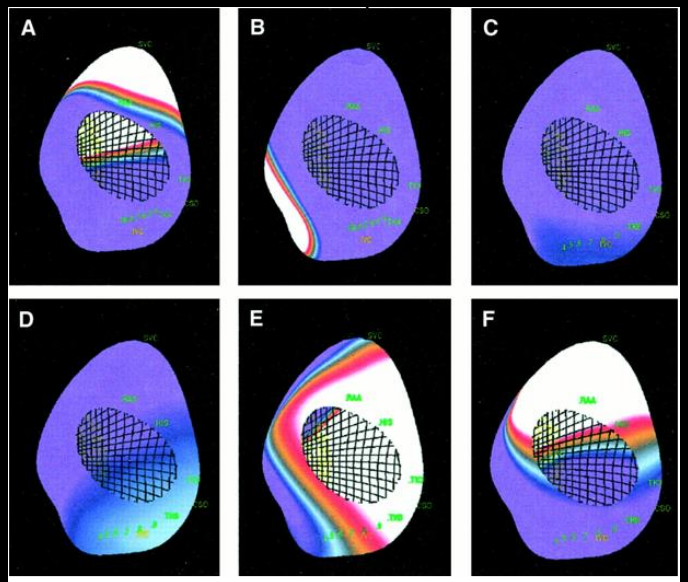
Figure 4 Cumulative risk of recurrent atrial fibrillation over by year. CI, confidence interval.

Conclusion One year risk of recurrent AF following first-time ablation has almost halved from 2006 to 2014. Hypertension, female sex, cardioversion 1 year prior to ablation, and AF duration for more than 2 years all increased the associated risk of recurrent AF.

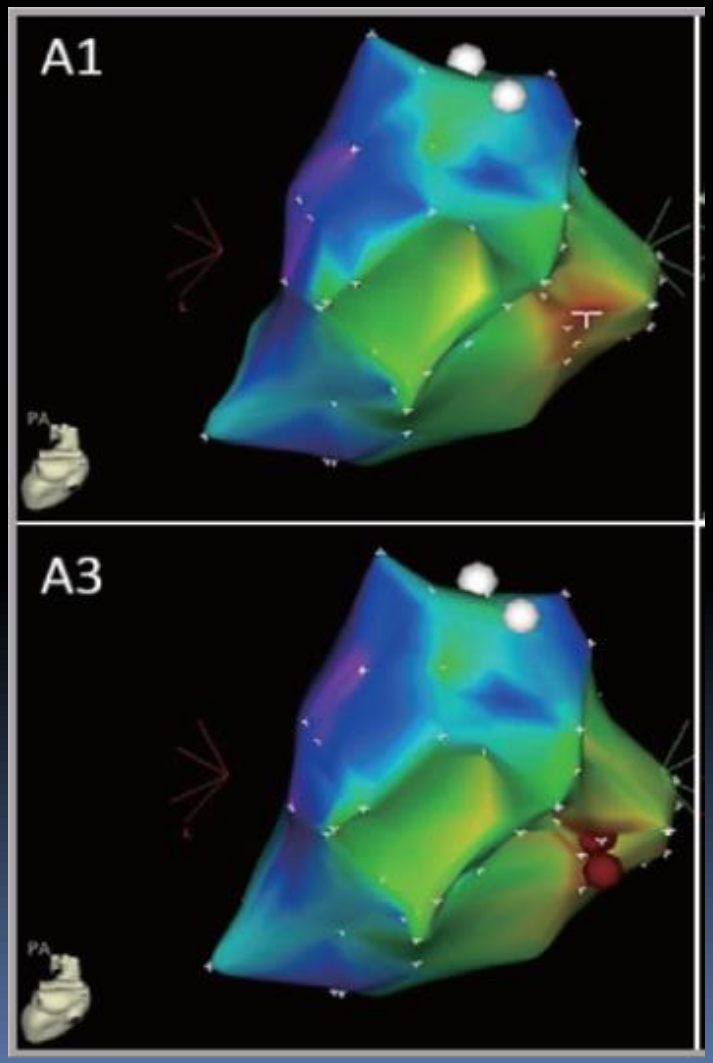
Pallisgaard JL, et al. Eur Heart J. 2018 Feb 7;39(6):442-449.

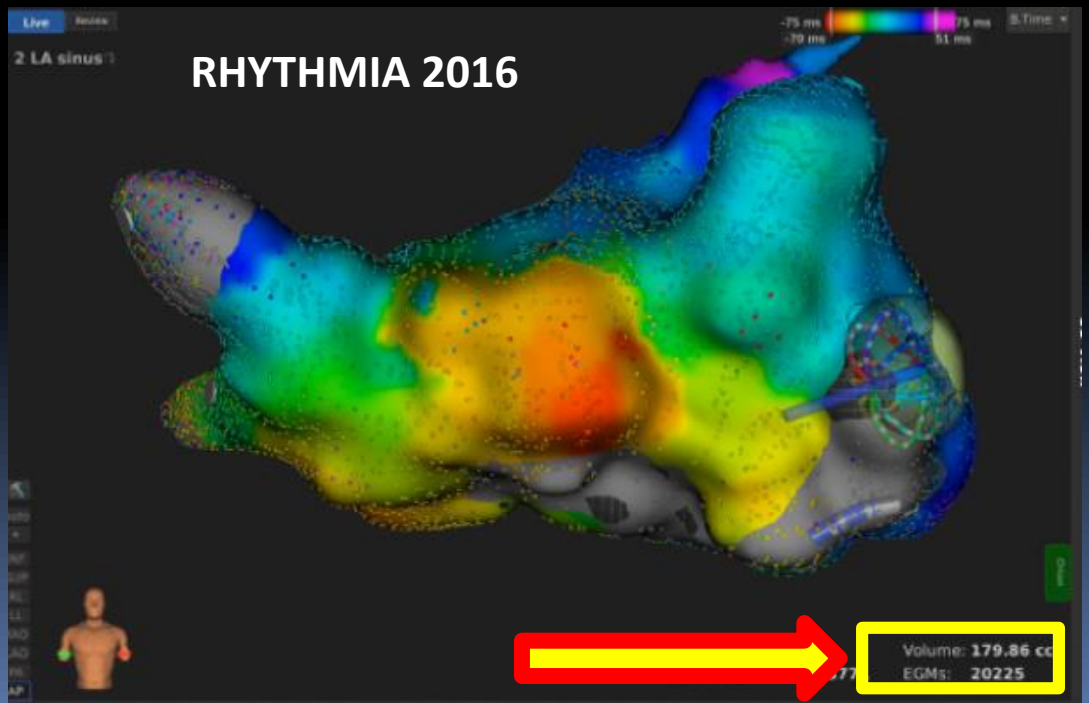
Εξέλιξη της Ηλεκτροανατομικής Χαρτογράφησης

ENSITE 1999



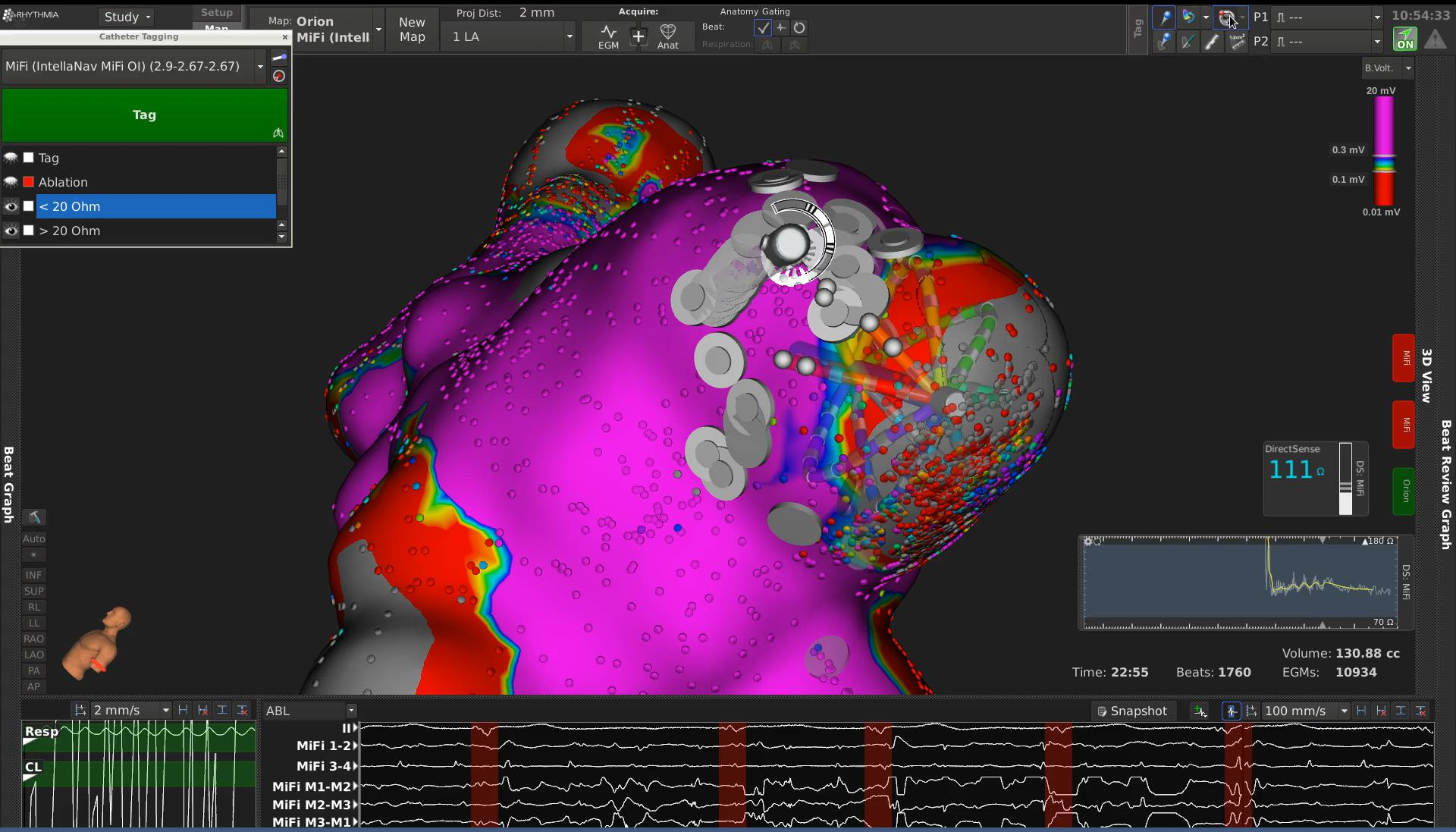
Thomas Paul et al. Circulation. 2001;103:2266-2271





Δυναμική Καταγραφή της Αντίστασης ως Ένδειξη Αποτελεσματικής Χορήγησης Βλαβών

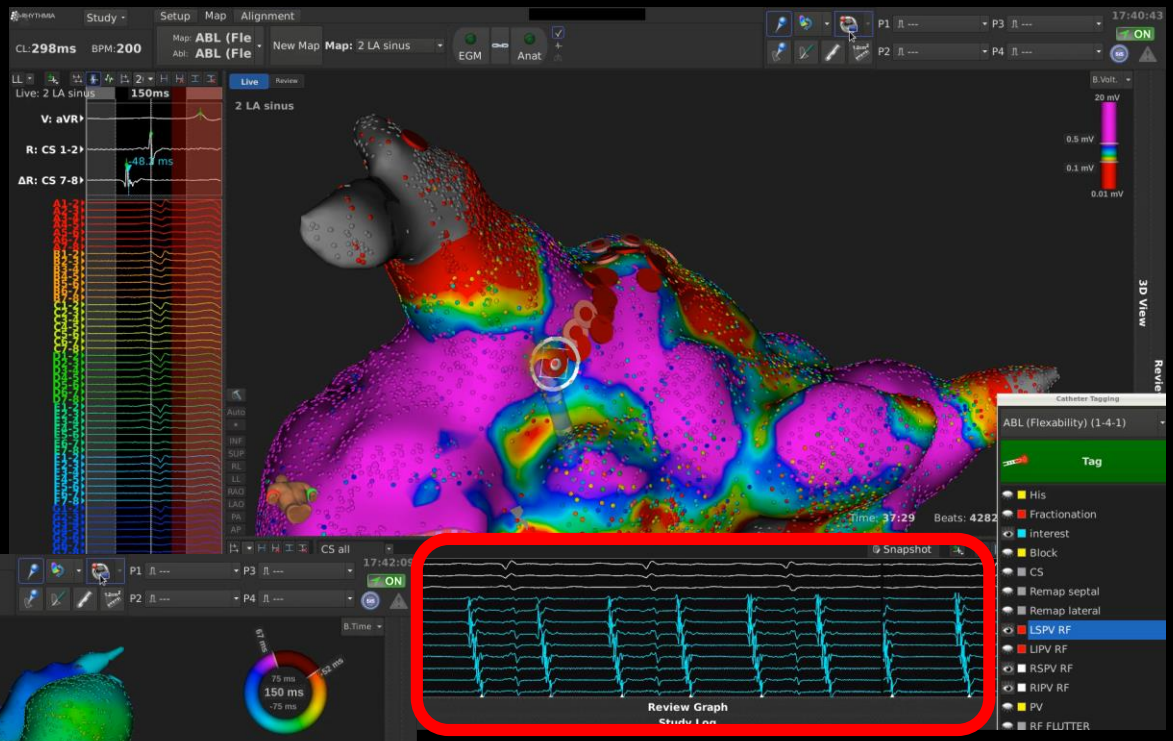
(Direct Sense catheter – Rhythmia Platform)

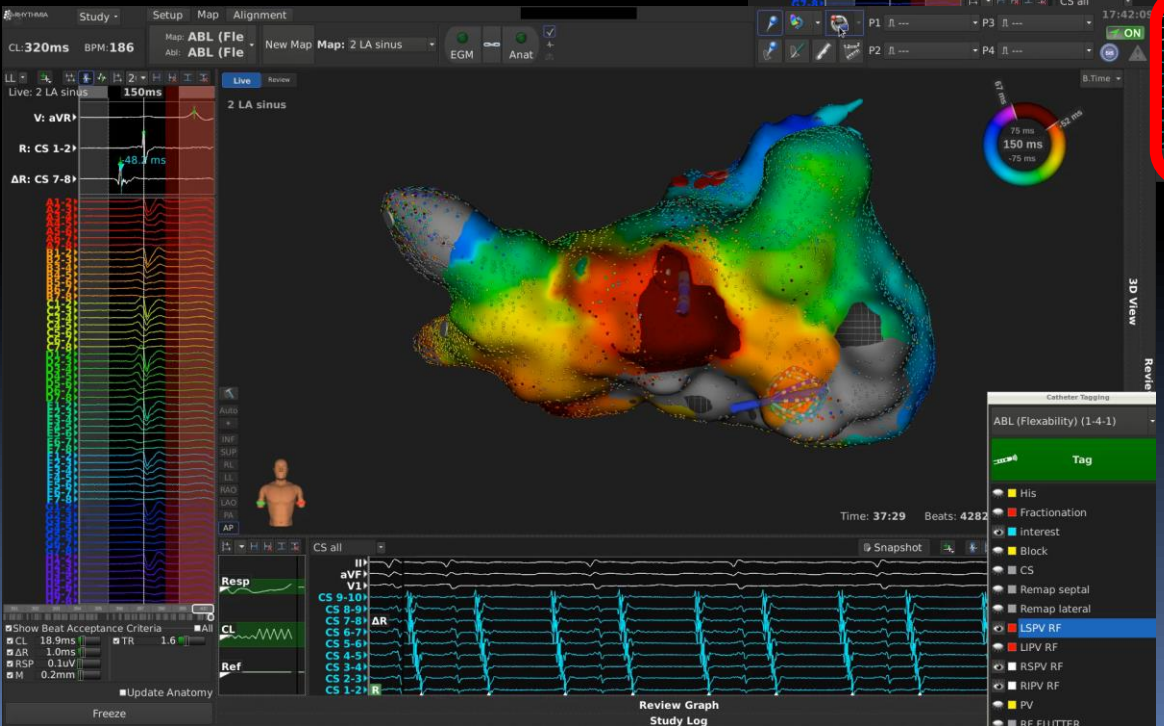


Αρχείο Γ.Ανδρικόπουλου, 2018

High-density electroanatomic mapping

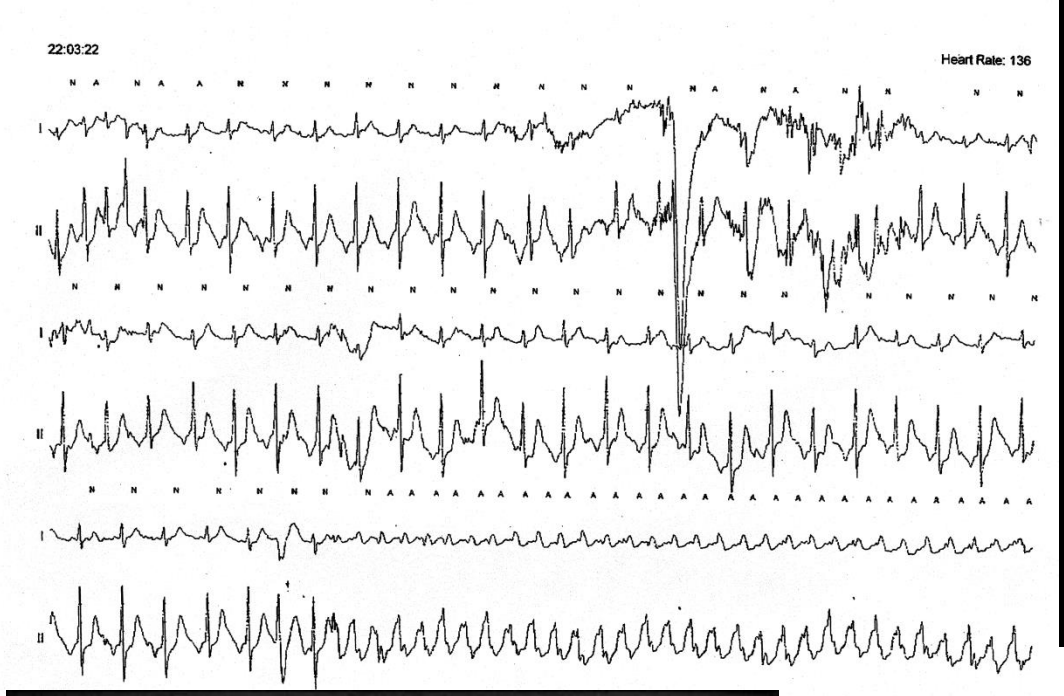
Atrial Flutter
Atrial Tachycardias



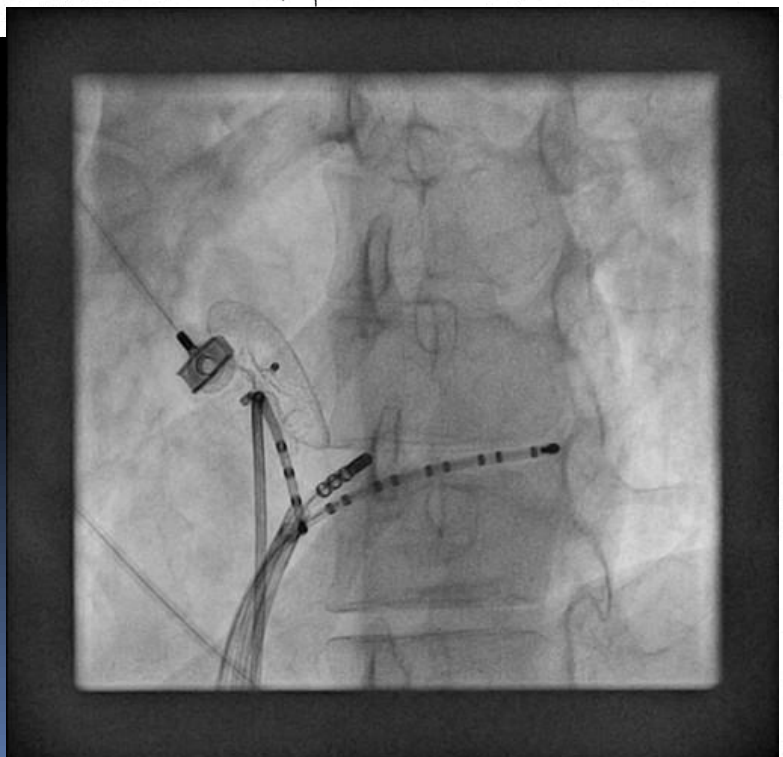


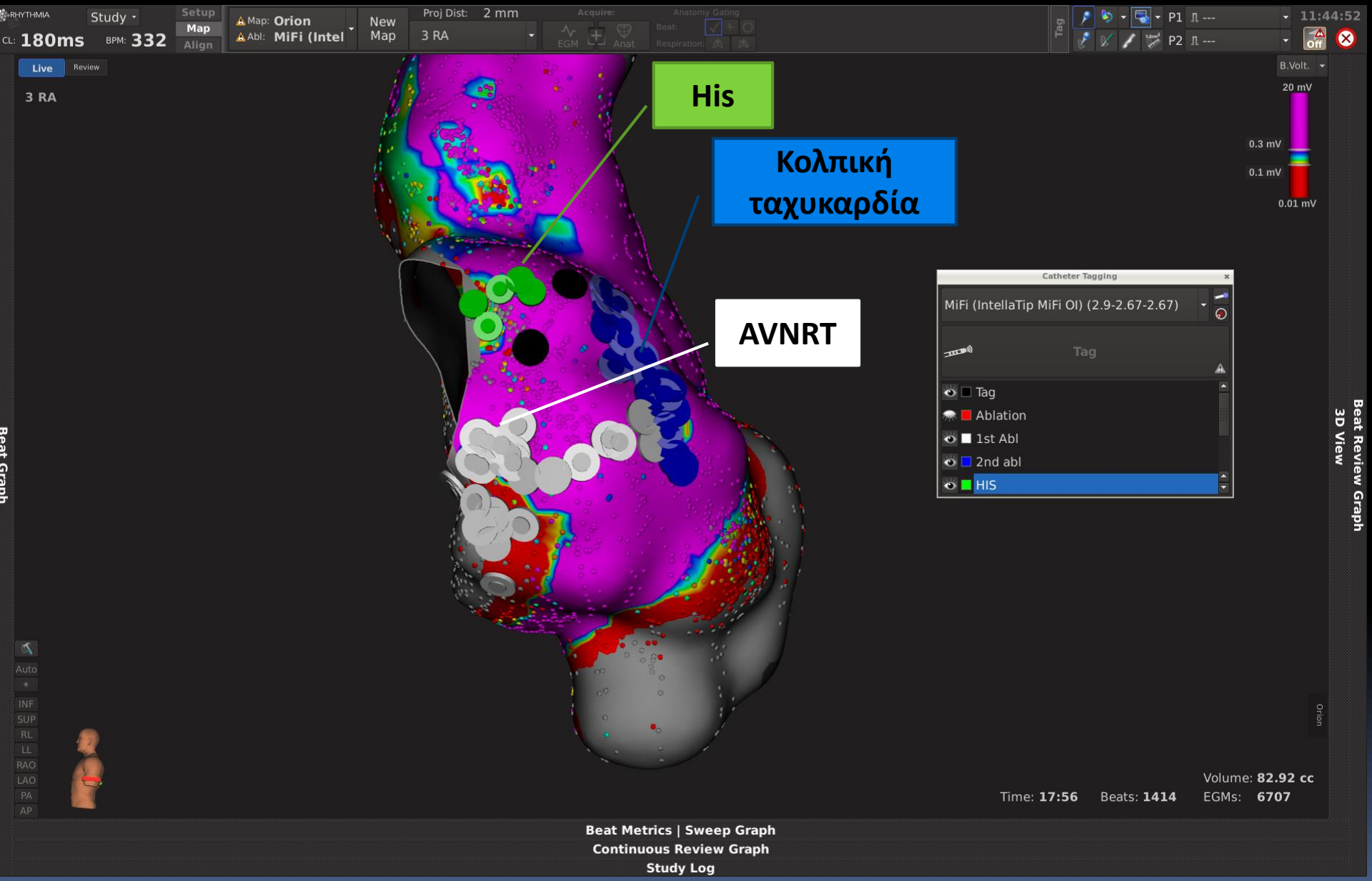
Atrial Tachycardia / Flutter may appear during PV isolation

Αρχείο Γ.Ανδρικόπουλου,
Ερρίκος Ντυνάν Hospital Center 2017

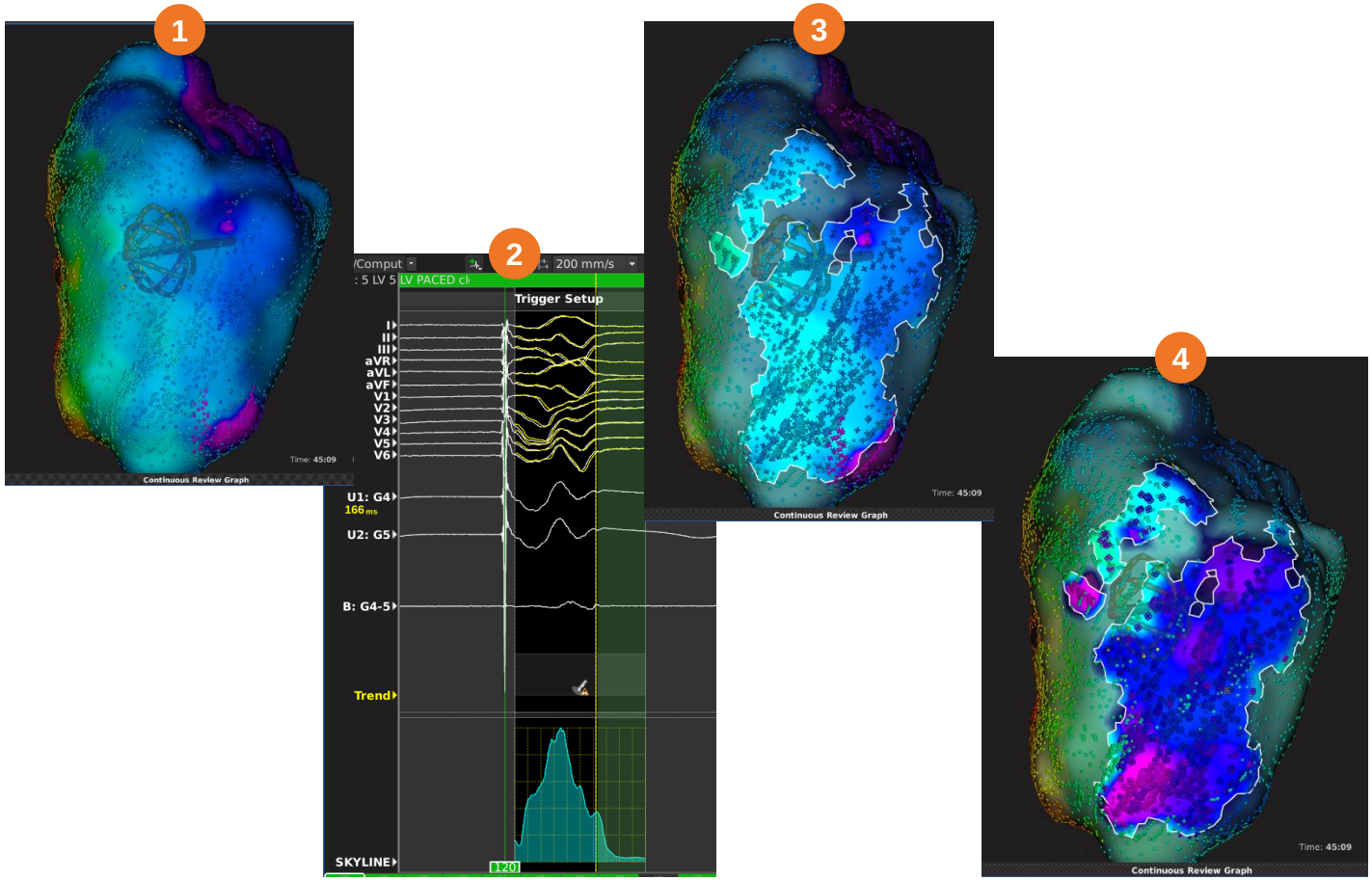


Ασθενής 25 ετών, που είχε υποβληθεί σε επέμβαση σύγκλεισης μεσοκολπικού ελλείματος σε ηλικία 15 ετών με συσκευή Amplatzer (17mm)



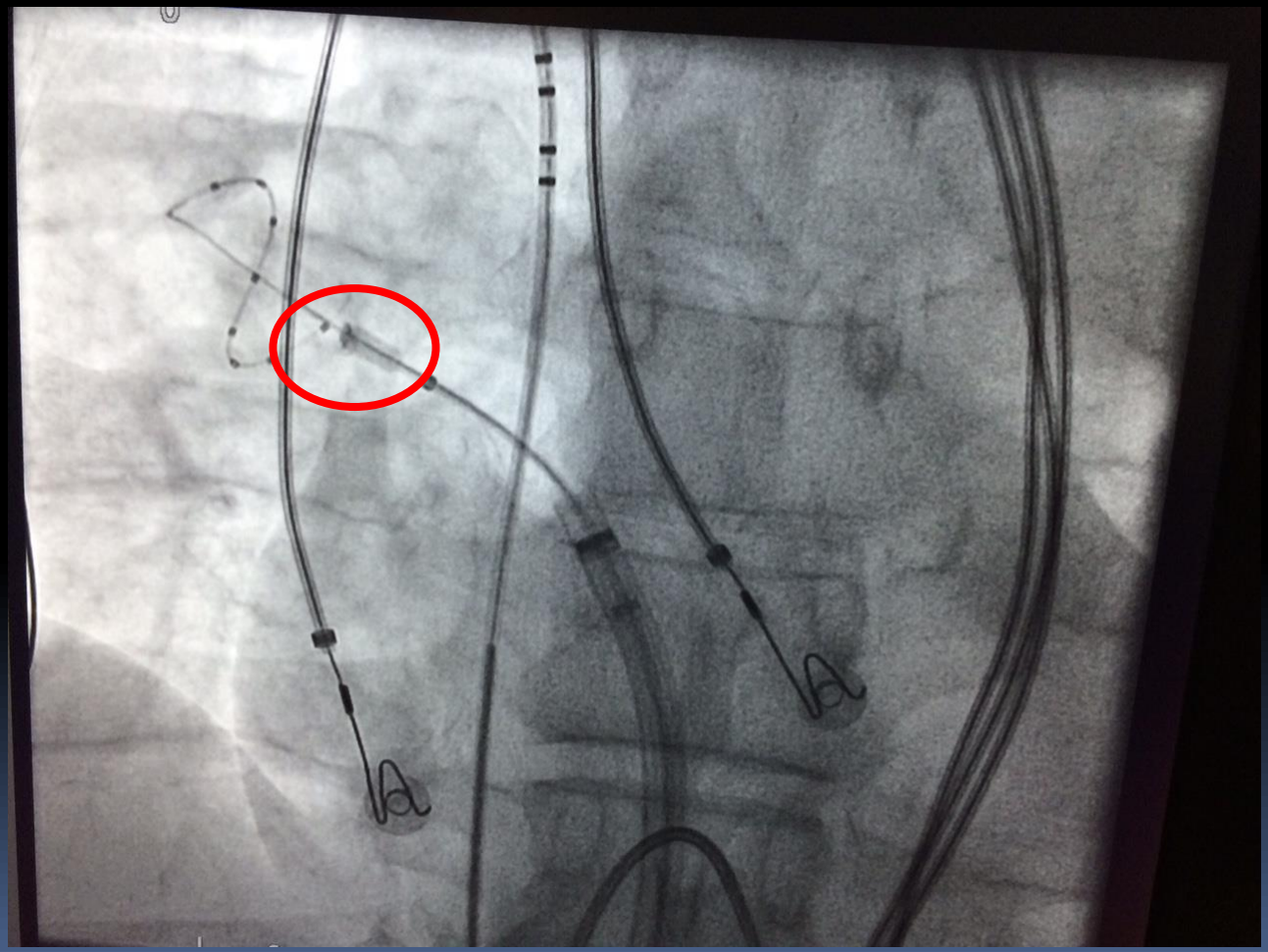

His
Κολπική ταχυκαρδία
AVNRT
RHYTHMIA
Study
CL: 180ms
BPM: 332
Setup
Map
Align
Map: Orion
Abl: MiFi (Intel
New Map
Proj Dist: 2 mm
3 RA
Acquire:
EGM
Anat
Anatomy Gating
Beat:
Respiration:
Tag
P1
P2
11:44:52
Off
Live
Review
3 RA
B.Volt.
20 mV
0.3 mV
0.1 mV
0.01 mV
Catheter Tagging
MiFi (IntellaTip MiFi OI) (2.9-2.67-2.67)
Tag
Tag
Ablation
1st Abl
2nd abl
HIS
Beat Review Graph
3D View
Beat Graph
Auto
INF
SUP
RL
LL
RAO
LAO
PA
AP
Orion
Volume: 82.92 cc
Time: 17:56
Beats: 1414
EGMs: 6707
Beat Metrics | Sweep Graph
Continuous Review Graph
Study Log

Group Re-Annotation example



Arctic Front Advance® ST

40% Shorter Tip than Arctic Front Advance



Αρχείο Γ.Ανδρικόπουλου,
Ερρίκος Ντυνάν Hospital Center 2015

Single-Procedure Outcomes and Quality-of-Life Improvement 12 Months Post-Cryoballoon Ablation in Persistent Atrial Fibrillation

Results From the Multicenter CRYO4PERSISTENT AF Trial

Serge Boveda, MD,[a] Andreas Metzner, MD,[b] Dinh Q. Nguyen, MD,[c] K.R. Julian Chun, MD,[d] Konrad Goehl, MD,[e] George Noelker, MD,[f] Jean-Claude Deharo, MD,[g] George Andrikopoulos, MD,[h] Tillman Dahme, MD,[i] Nicolas Lellouche, MD,[j] Pascal Defaye, MD[k]

(JACC Electrophysiology in press 2018)

FIGURE 2 Freedom From Atrial Fibrillation, Atrial Flutter, Atrial Tachycardia Recurrence

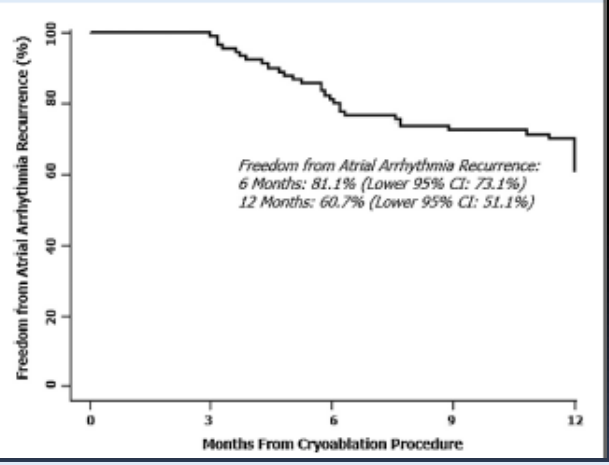
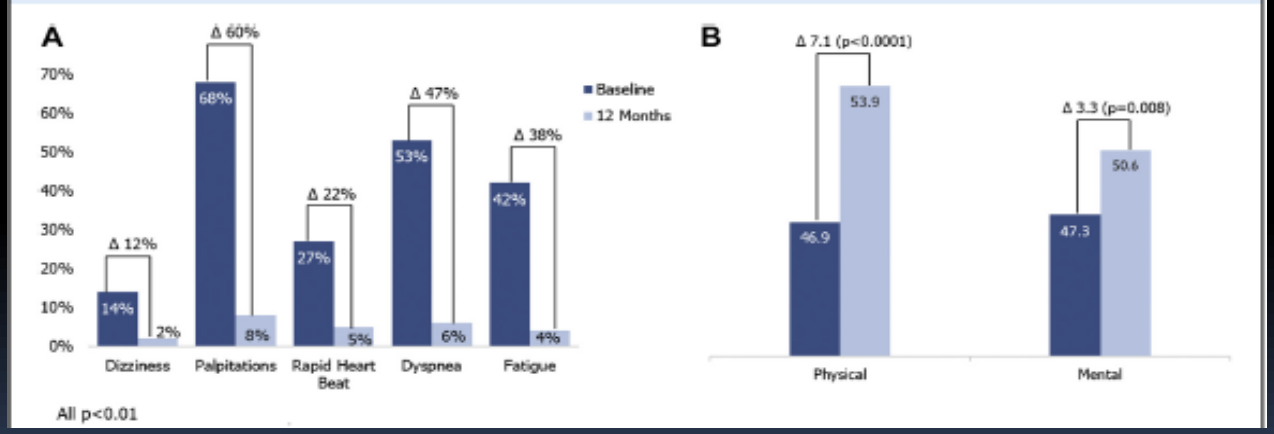
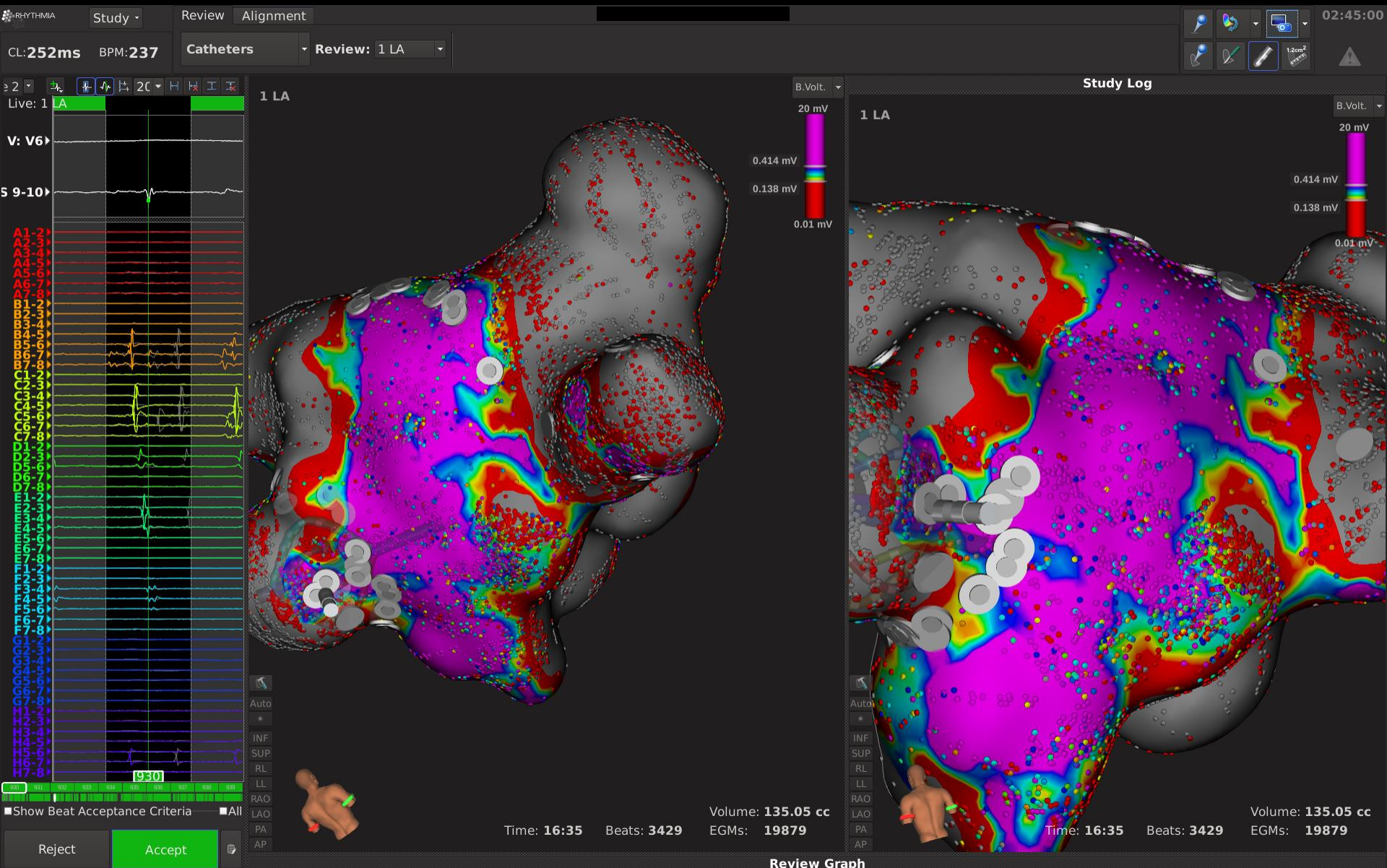


FIGURE 3 Arrhythmia-Related Symptoms, QoL, and EHRA AF Symptom Score



CONCLUSIONS Cryoballoon ablation for treatment of PerAF demonstrated 61% single-procedure success at 12 months post-ablation in addition to significant reduction in arrhythmia-related symptoms and improved quality of life. (Cryoballoon Ablation for Early Persistent Atrial Fibrillation [Cryo4 Persistent AF]; NCT02213731). (J Am Coll Cardiol EP 2018;■:■–■) © 2018 The Authors. Published by Elsevier on behalf of the American College of Cardiology Foundation. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

Επέμβαση κατάλυσης με Rhythmia 4 χρόνια μετά από κατάλυση με Cryoballoon



POLARx – Cryo ablation Redesigned

SMARTFREEZE™
CONSOLE

Customizable Console Puts EP In Control

POLARSHEATH™
STEERABLE SHEATH

Confidently Approach the Pulmonary Veins

POLARx™
CRYOABLATION CATHETER

Maintain Stable Balloon Placement

POLARMAP™
CIRCULAR MAPPING CATHETER

Optimized signal monitoring

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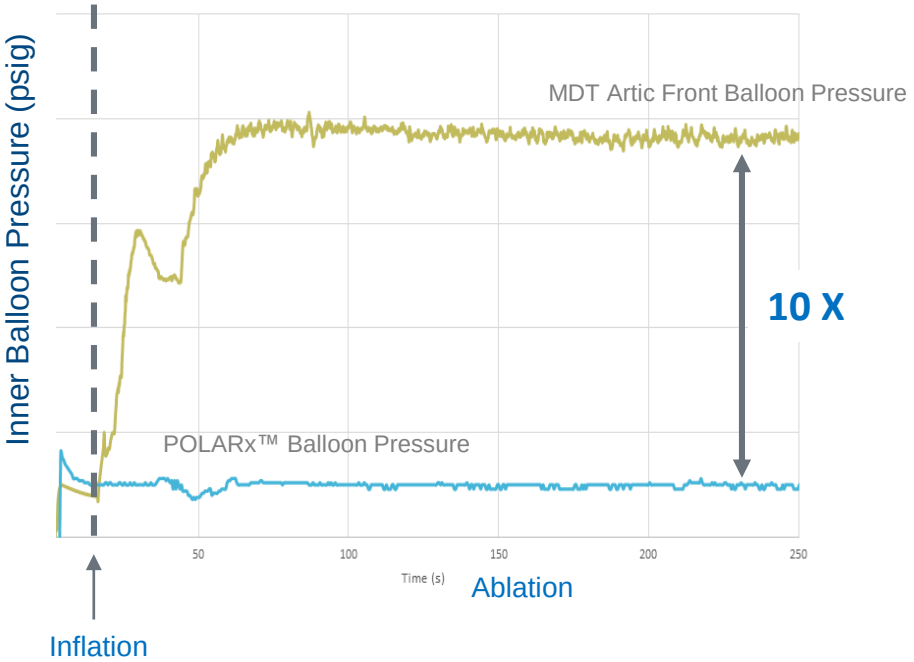
POLARx™
CRYOABLATION CATHETER

BSC POLARx™ vs MDT ArticFront
Inner Balloon Pressure During Cryoablation



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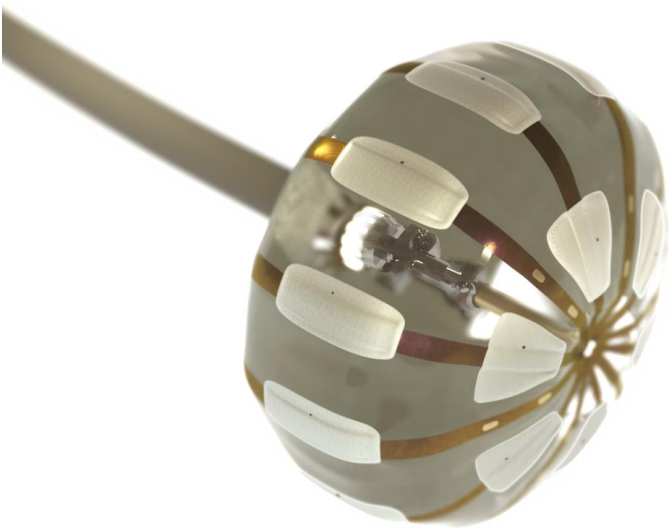

LUMINIZE™
RF BALLOON CATHETER

Reveal: Visual Guidance to Directly Assess Contact

Customize: Configure for Circumferential and Segmental Lesions

Analyze: Monitor real time Pulmonary Vein isolation

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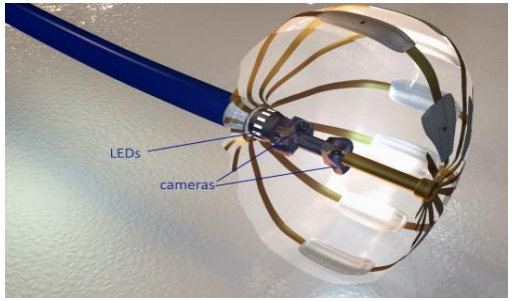
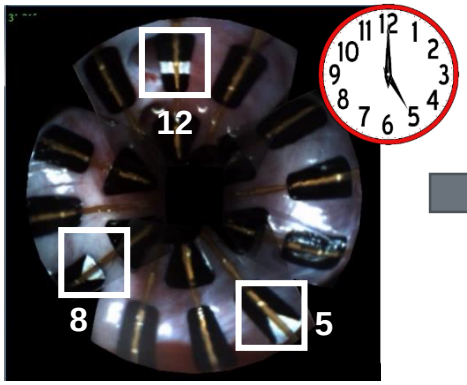
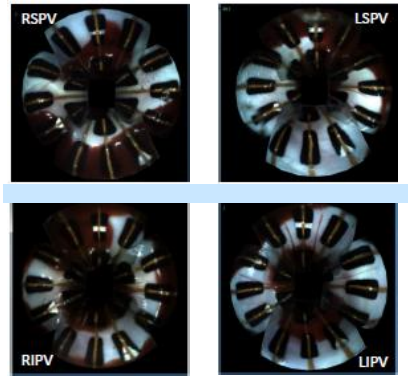
LUMINIZE RF Balloon



Visual Guidance Landmarks



Examples of Contact



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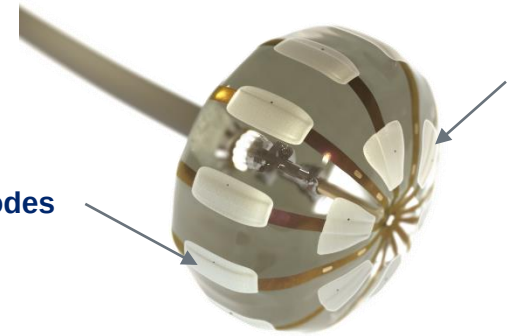
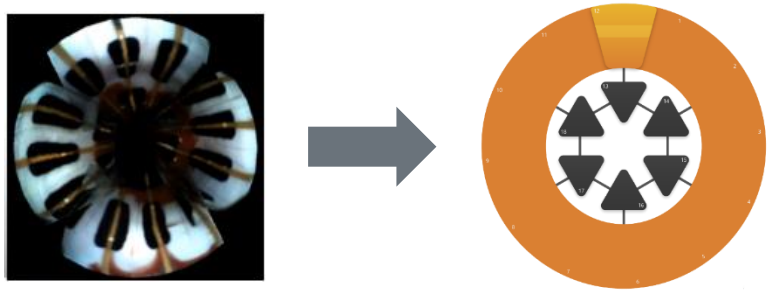
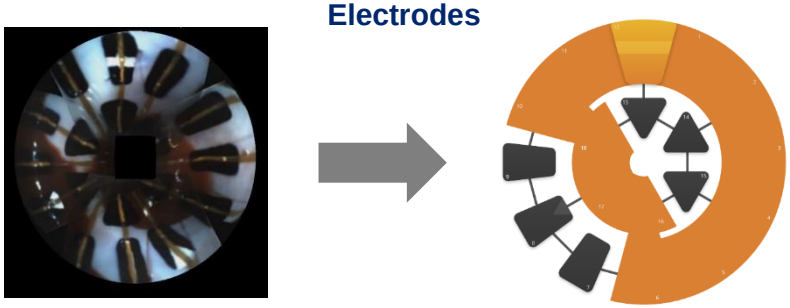


Co-Axial Approach with Equatorial Electrodes



Visual Guidance

Off-Axis Approach with Equatorial + Forward Facing Electrodes



Visual Guidance

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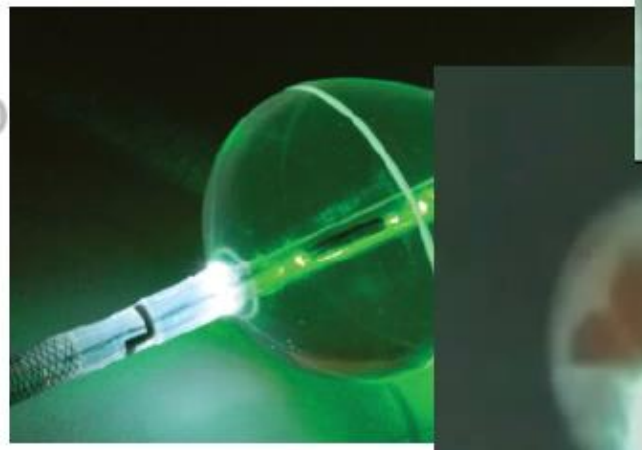
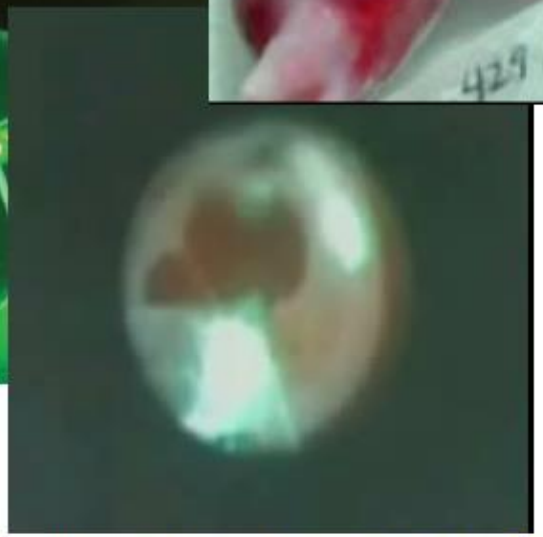
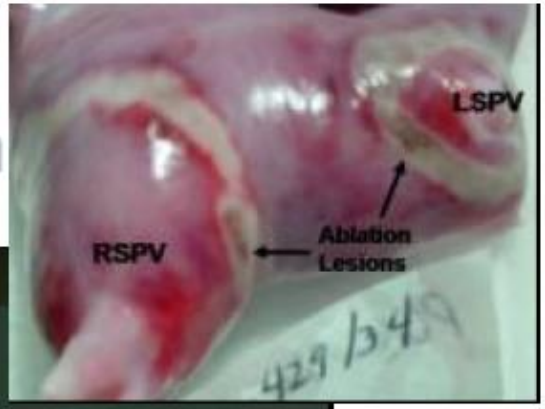
Improving the Rate of Durable PVI

Technological Advances

- Balloons
- Advances in point ablation tech
- atio







MSSM
MOUNT SINAI SCHOOL OF MEDICINE

V.Reddy, P.Neuzil, S.Themistocalkis, et al, *Circulation* 120:12 (2009)
S.Dukkipati / P.Neuzil / A.d'Avila / V.Reddy, *Circ Arry* 3;266-273 (2010)
S.Dukkipati / KH.Kuck / P.Neuzil / A.Natale / V.Reddy, *Circ Arry* 6:467 (2013)

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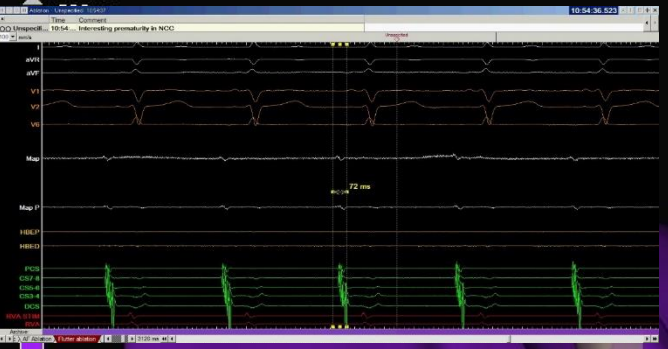
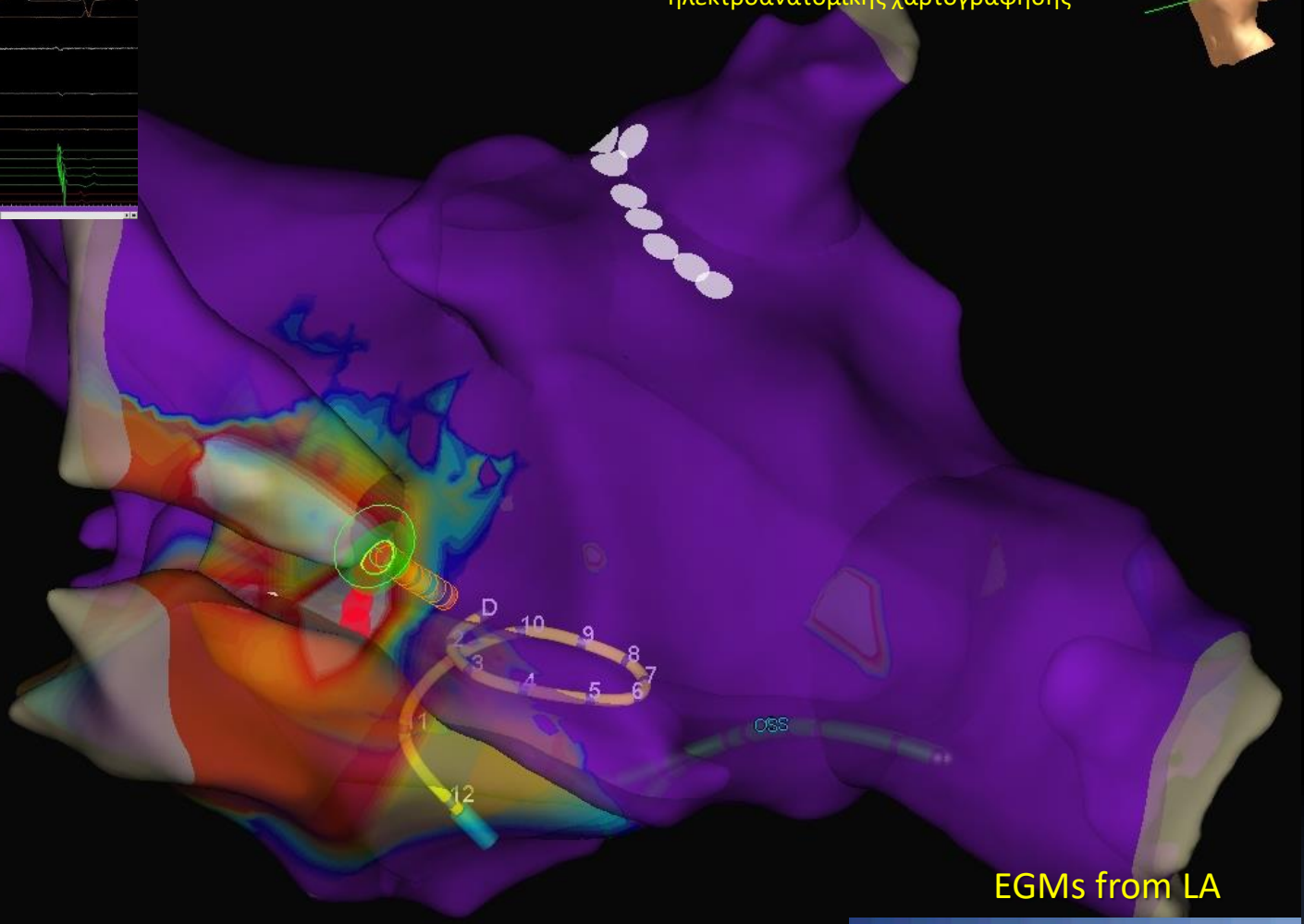
Ασθενής 52 ετών που είχε κάνει RF AF ablation το 2014.
Συχνές κρίσεις ΚΜ το τελευταίο έτος (είχε στείλει ΗΚΓματα με email)

Φεβρουάριος 2018, Αρχείο Γ.Ανδρικόπουλου

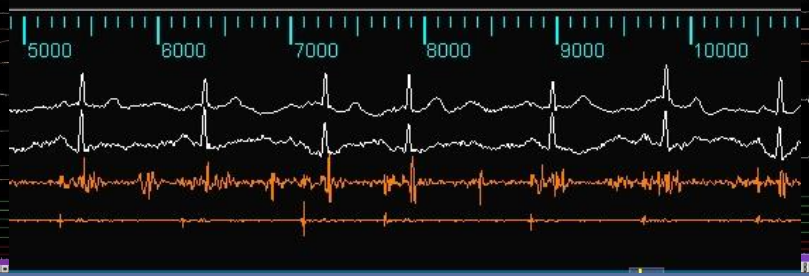
Δυνατότητα σύγχρονης καταγραφής δυναμικών από πολλούς καθετήρες κι ενιαίας παρουσίασης των δεδομένων της ηλεκτροανατομικής χαρτογράφησης



EGMs from NCC

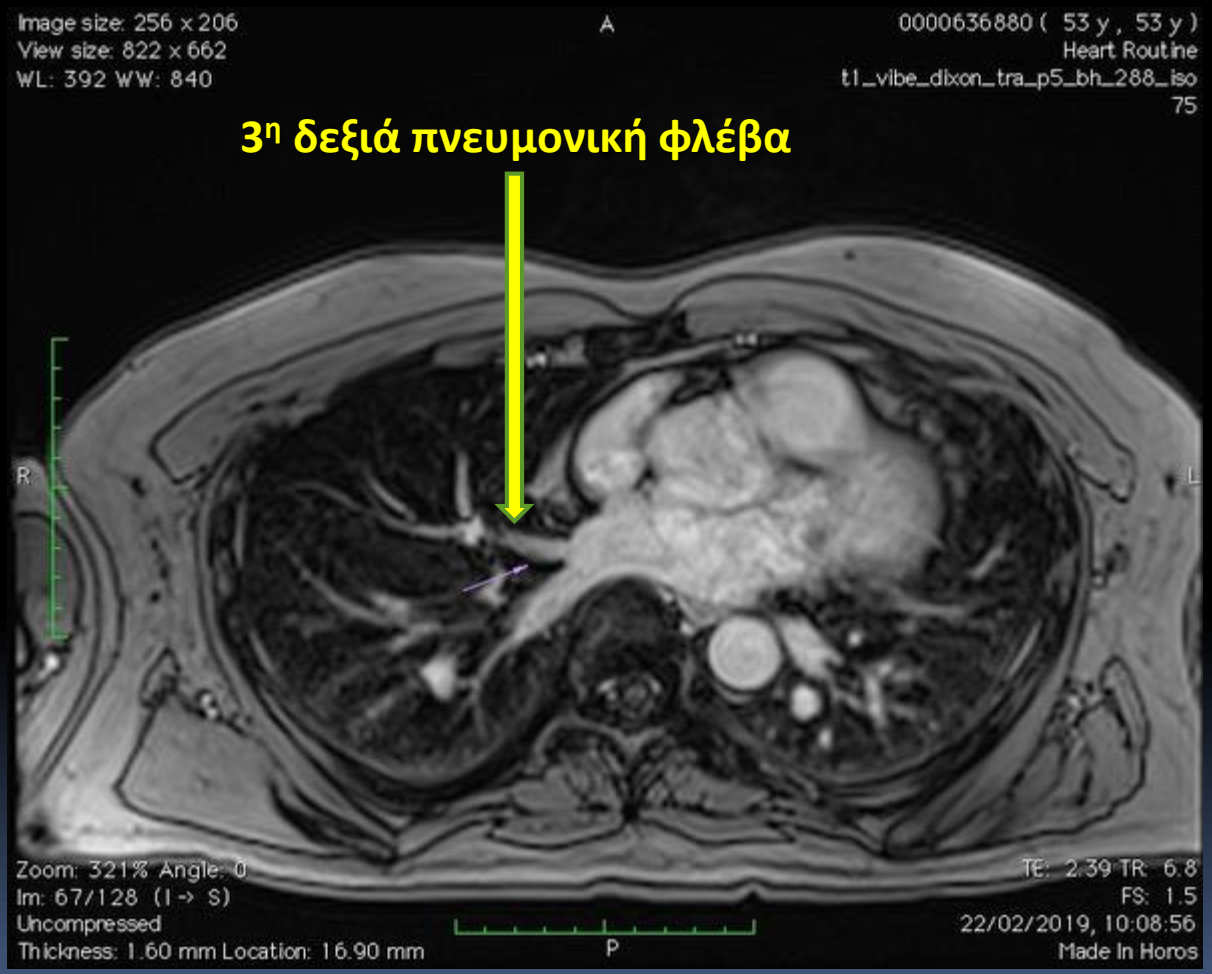


EGMs from RA

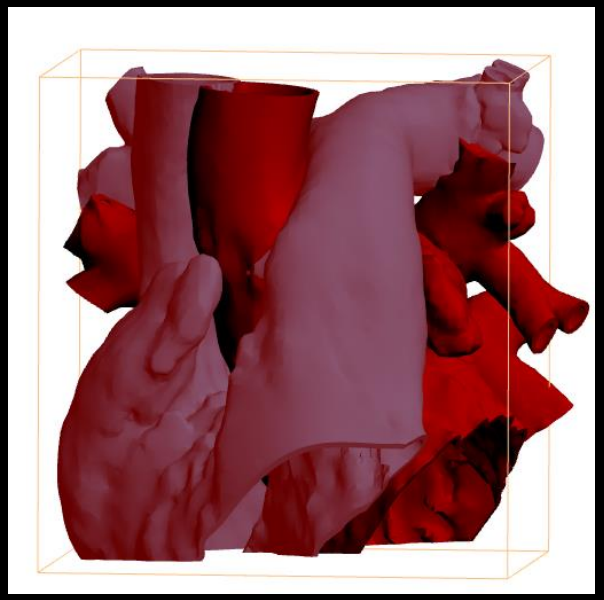


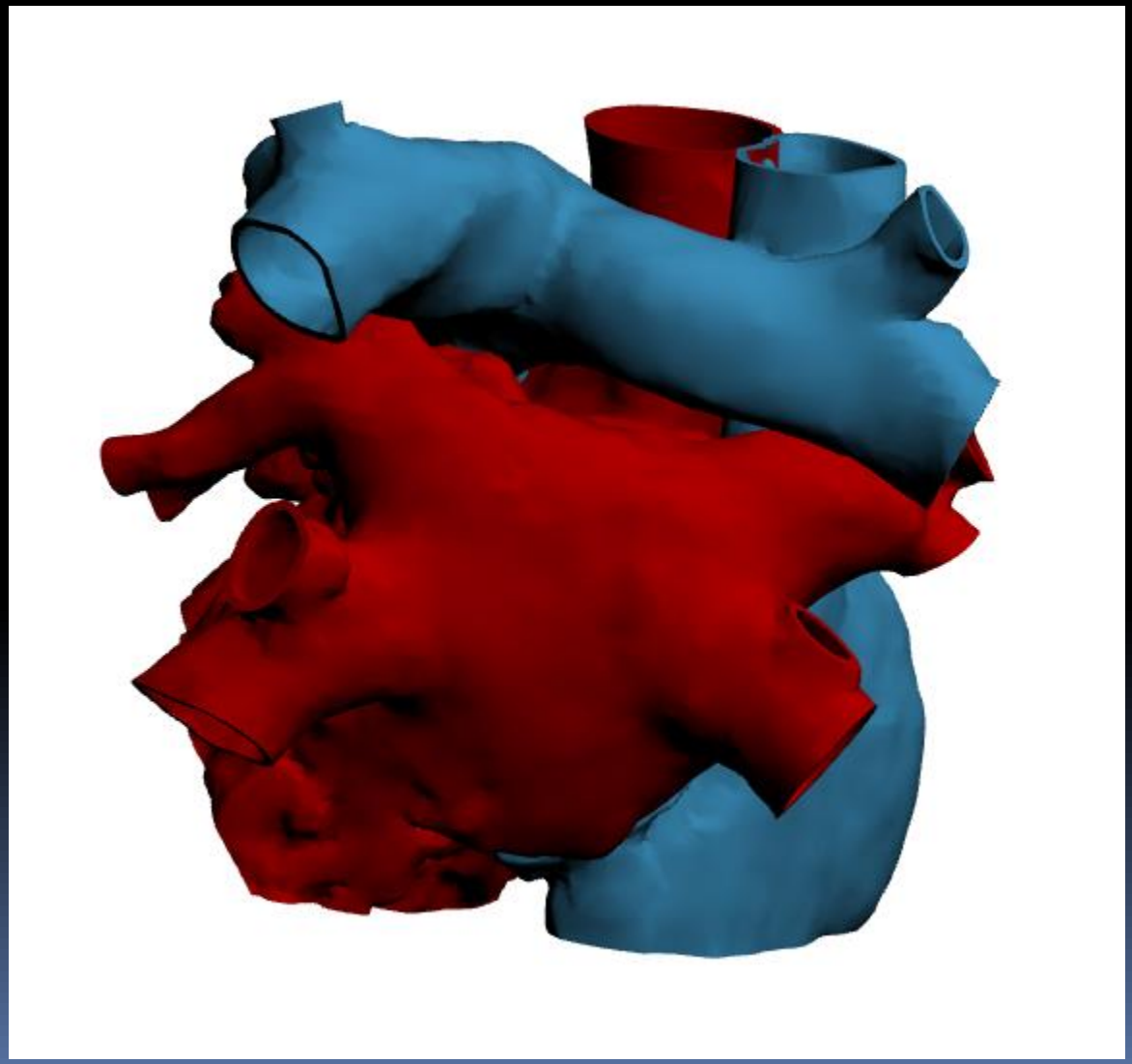
EGMs from LA

Ασθενής 48 ετών, άντρας, με πολλαπλές κρίσεις ΚΜ, άριστη κατάσταση, μικρός κόλπος, καμία συννοσηρότητα, υποβλήθηκε προ 9 μηνών σε επέμβαση κατάλυσης κολπικής μαρμαρυγής ΧΩΡΙΣ ηλεκτροανατομική χαρτογράφηση



3D modeling of the heart before AF ablation





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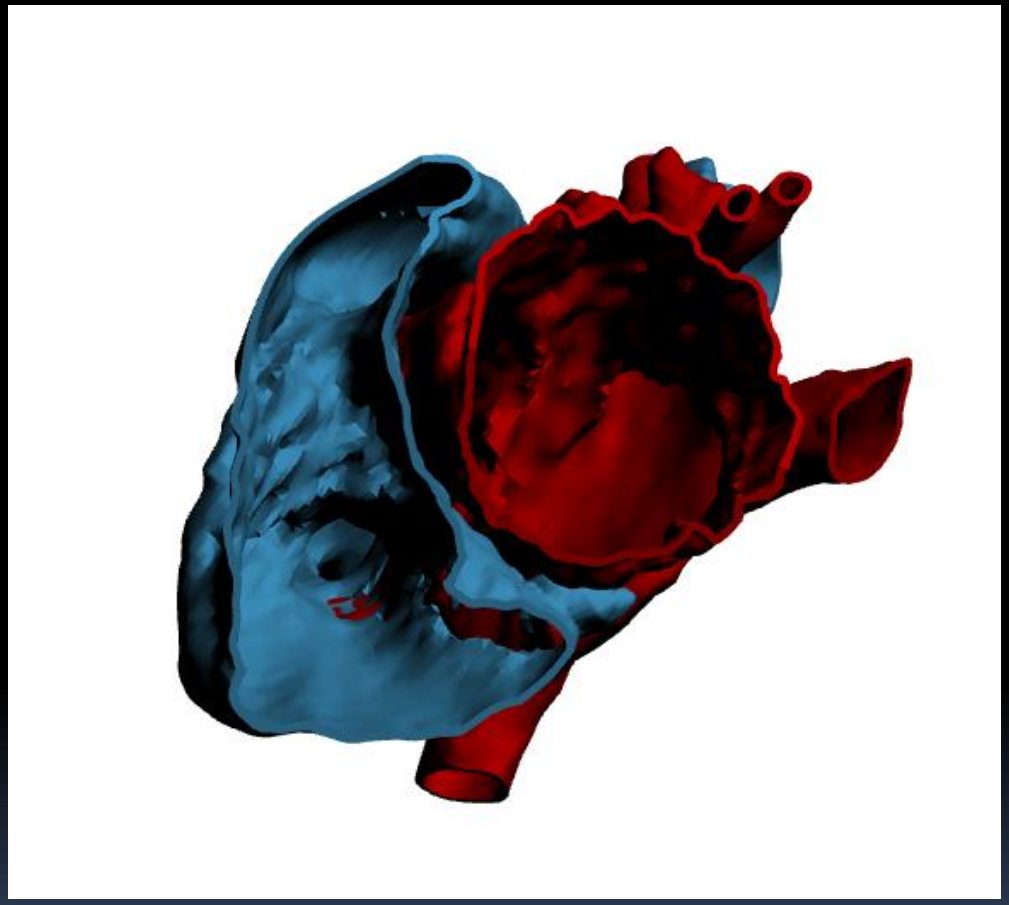
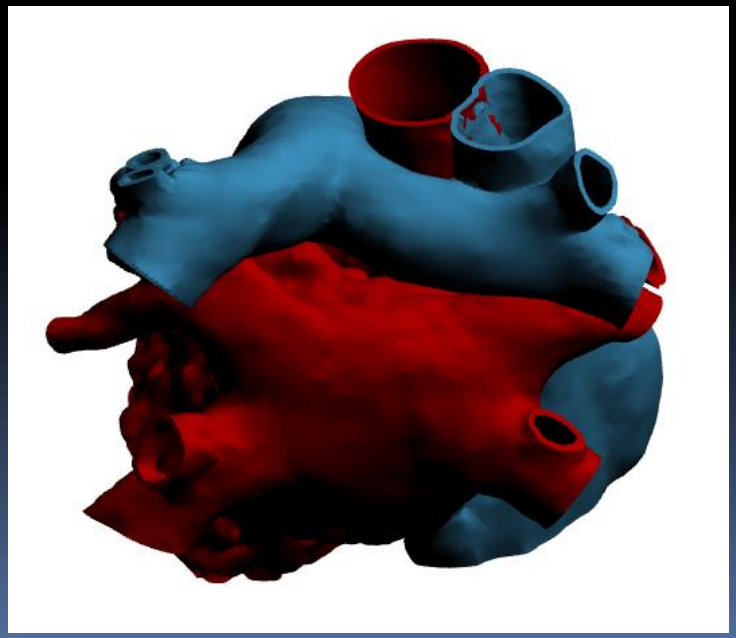
3D modeling of the heart before AF ablation





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3D modeling before AF ablation

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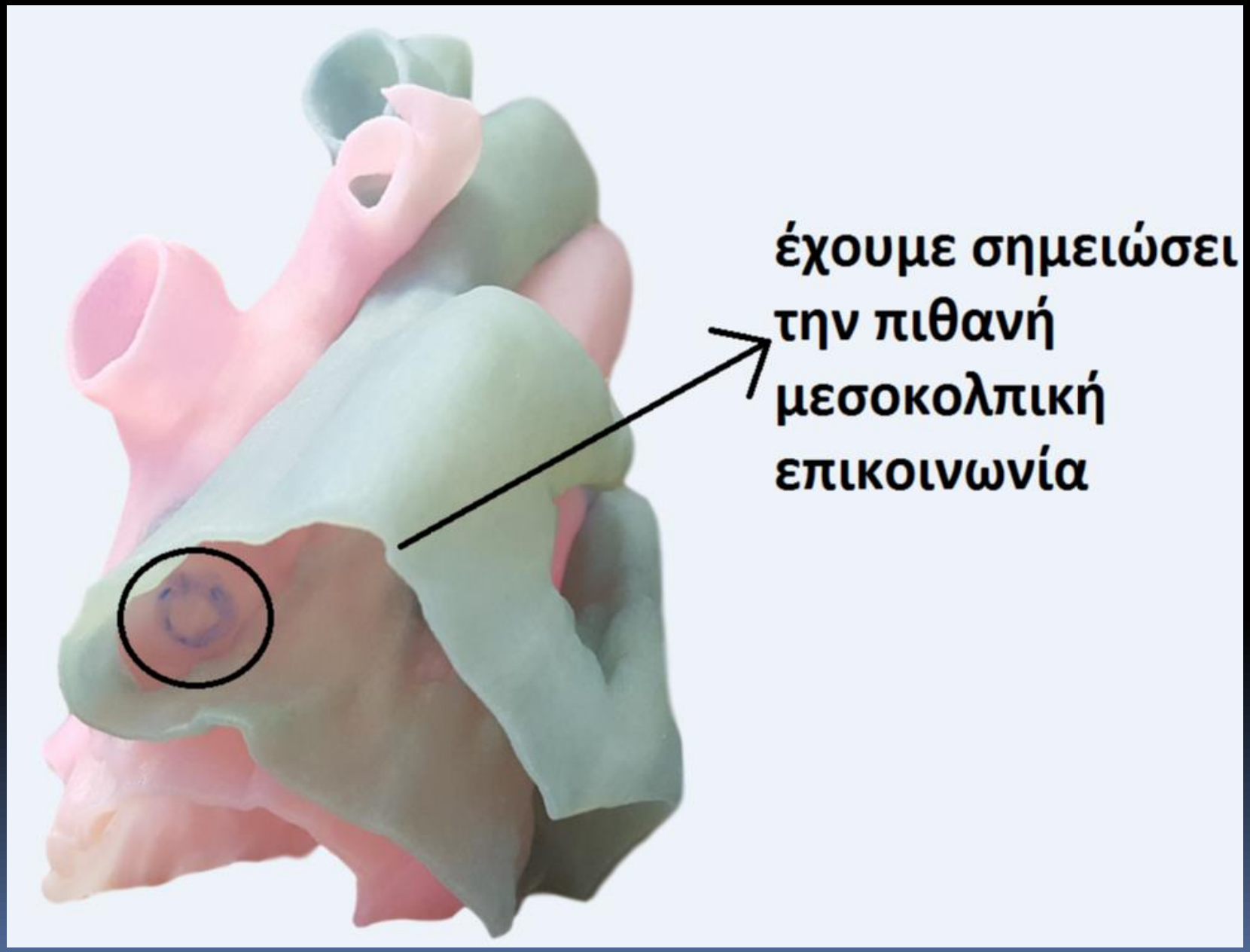
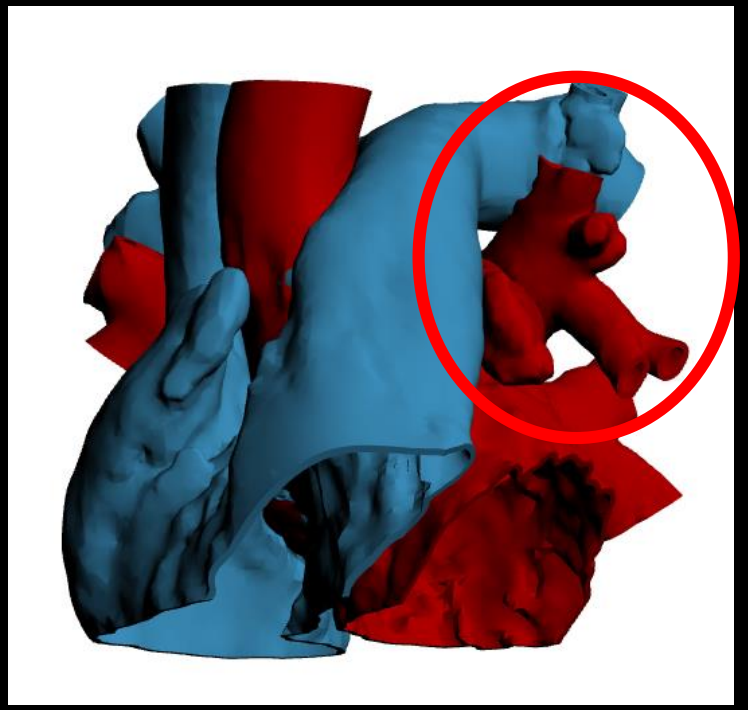
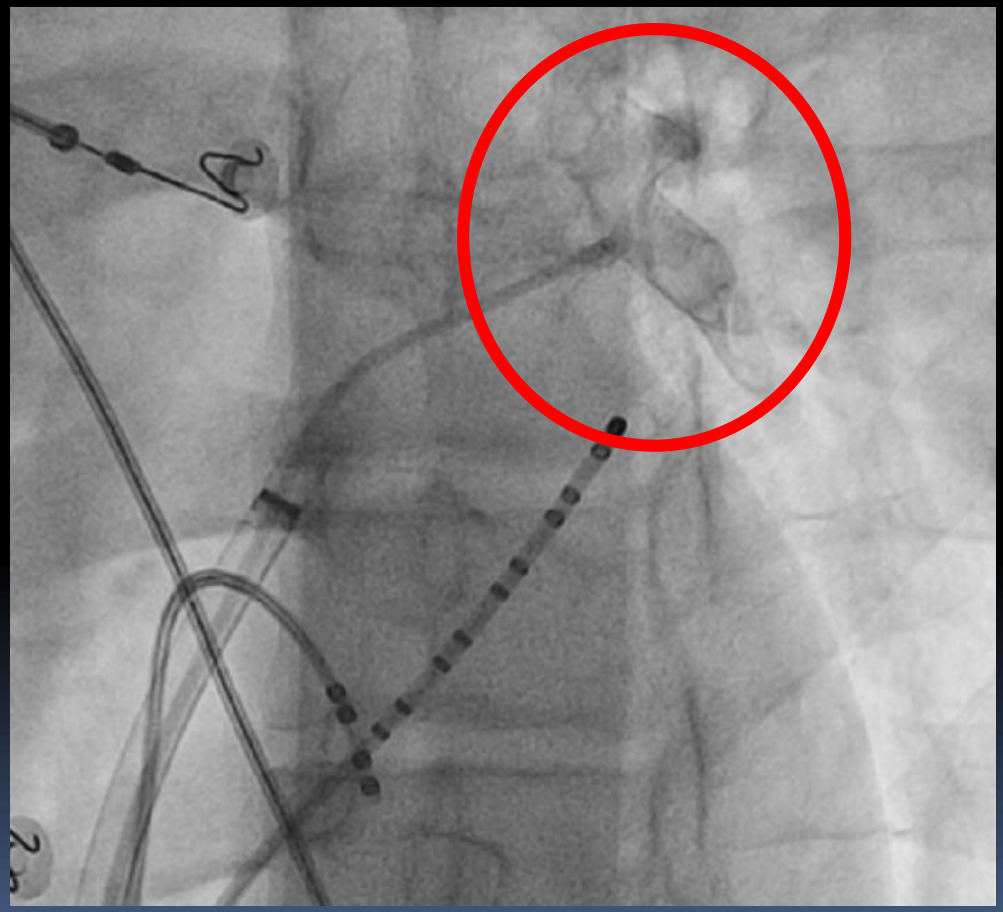
3D modeling before AF ablation



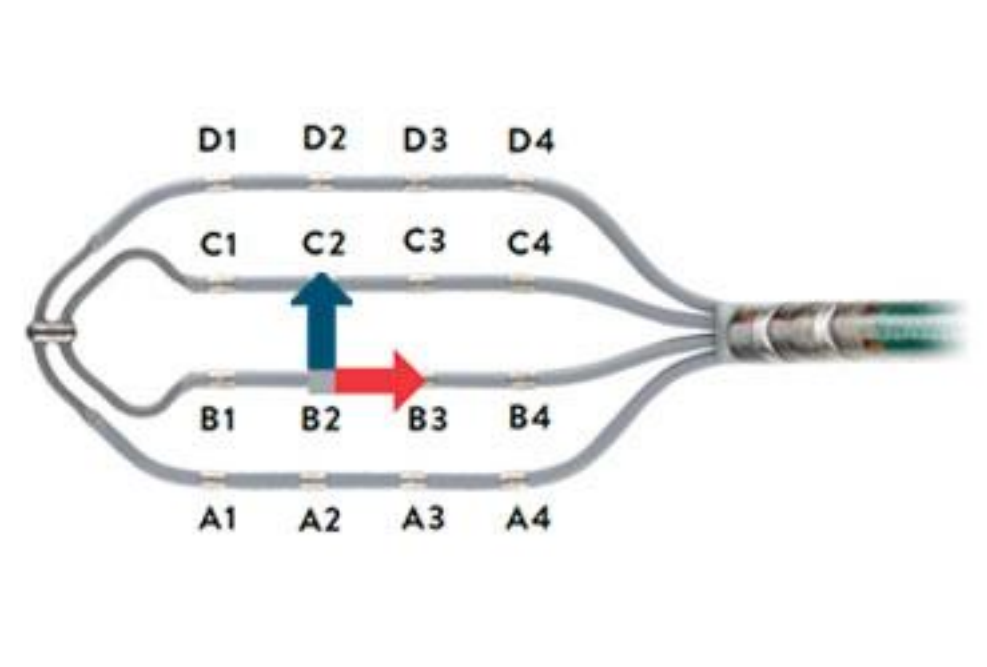
3D modeling before AF ablation

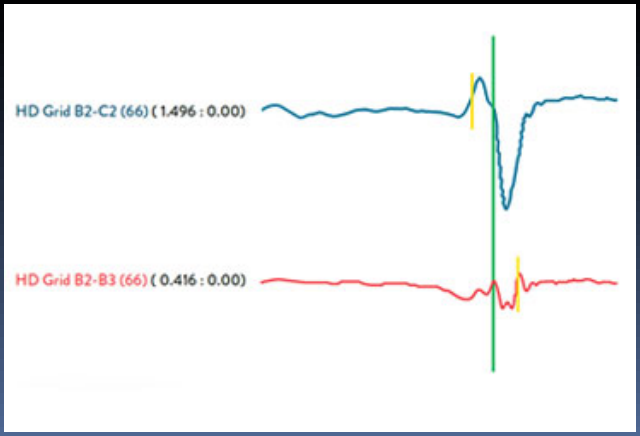


LSPV

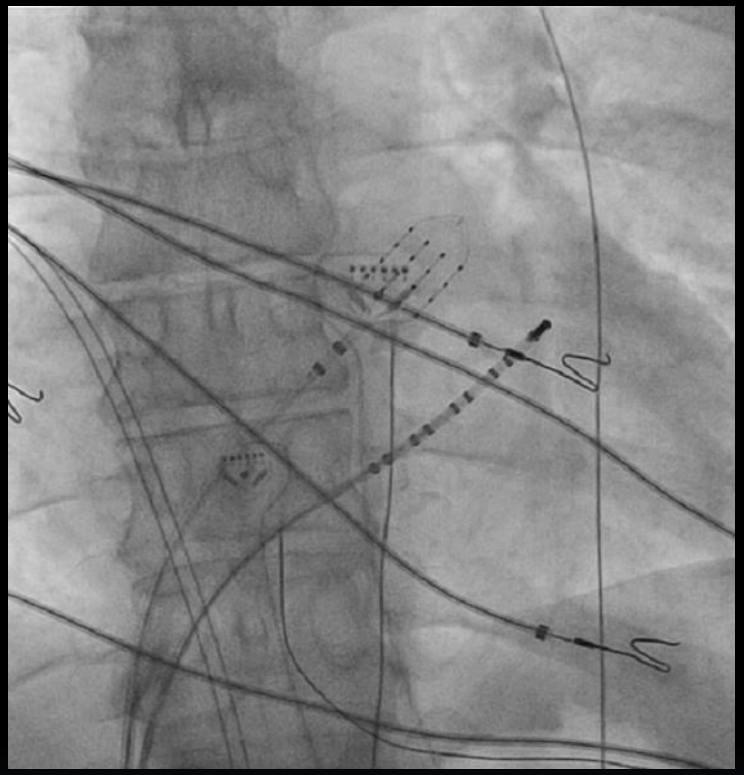


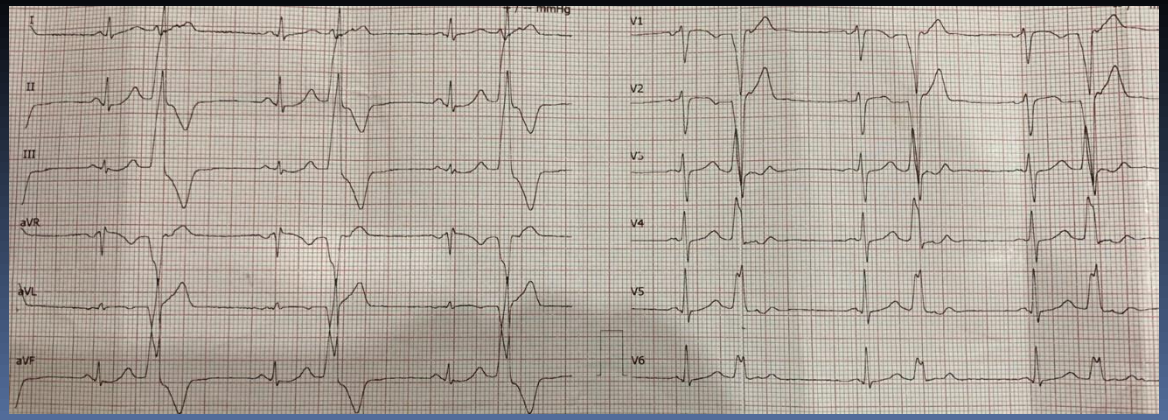
ADVISOR™ HD GRID MAPPING CATHETER SENSOR ENABLED™





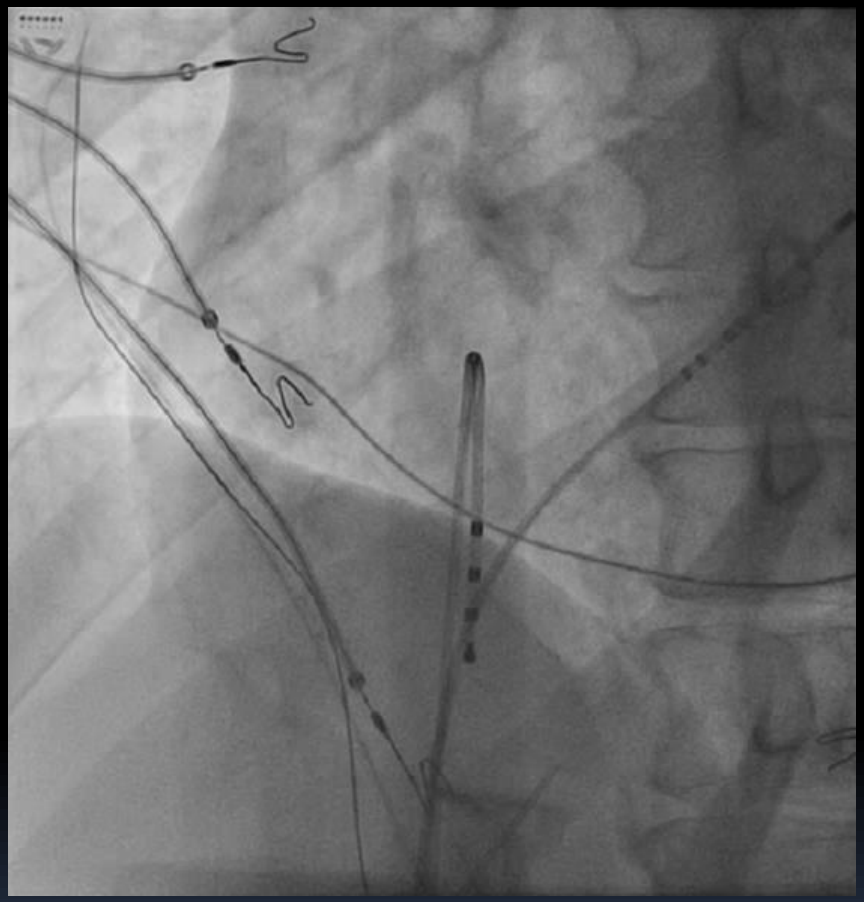
Ασθενής 44 ετών με 40.000 κοιλιακές συστολές κι αρχόμενη διάταση της ΑΚ με μέτρια συστολική δυσλειτουργία αυτής

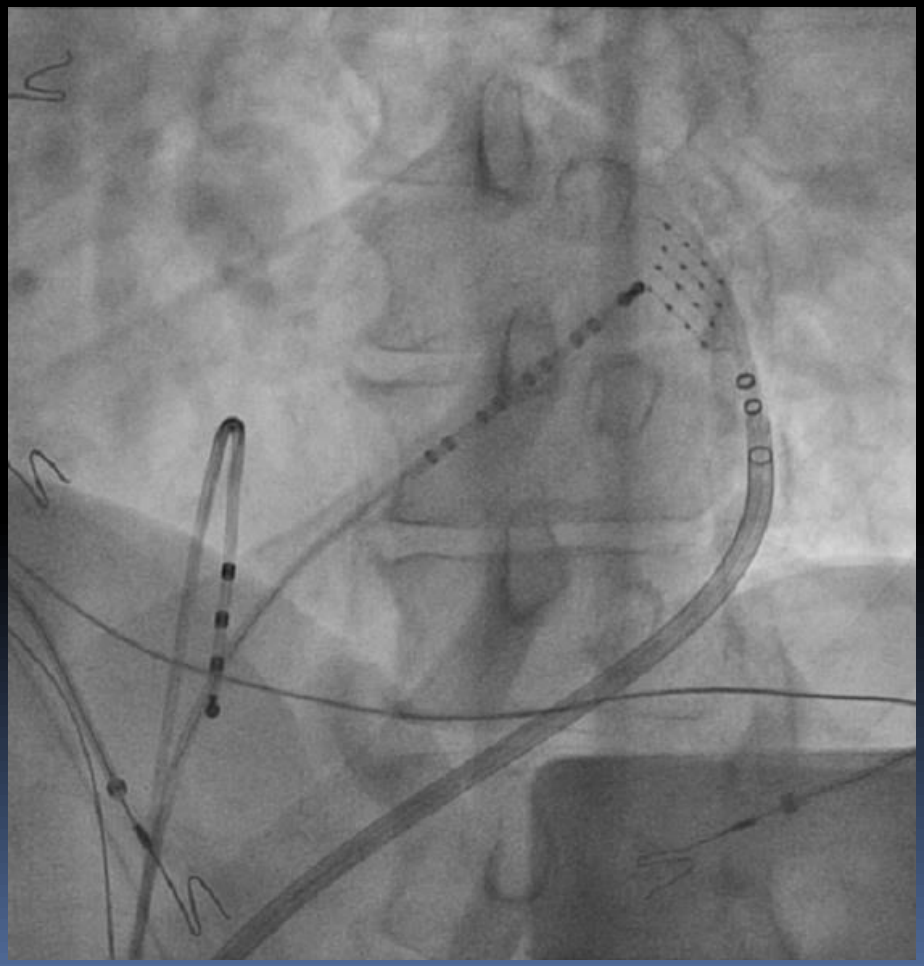




Αρχείο Γ.Ανδρικόπουλου, Μάρτιος 2019

Ασθενής 44 ετών με 40.000 κοιλιακές συστολές κι αρχόμενη διάταση της ΑΚ με μέτρια συστολική δυσλειτουργία αυτής





Αρχείο Γ.Ανδρικόπουλου, Μάρτιος 2019

Ασθενής 44 ετών με 40.000 κοιλιακές συστολές κι αρχόμενη διάταση της ΑΚ με μέτρια συστολική δυσλειτουργία αυτής

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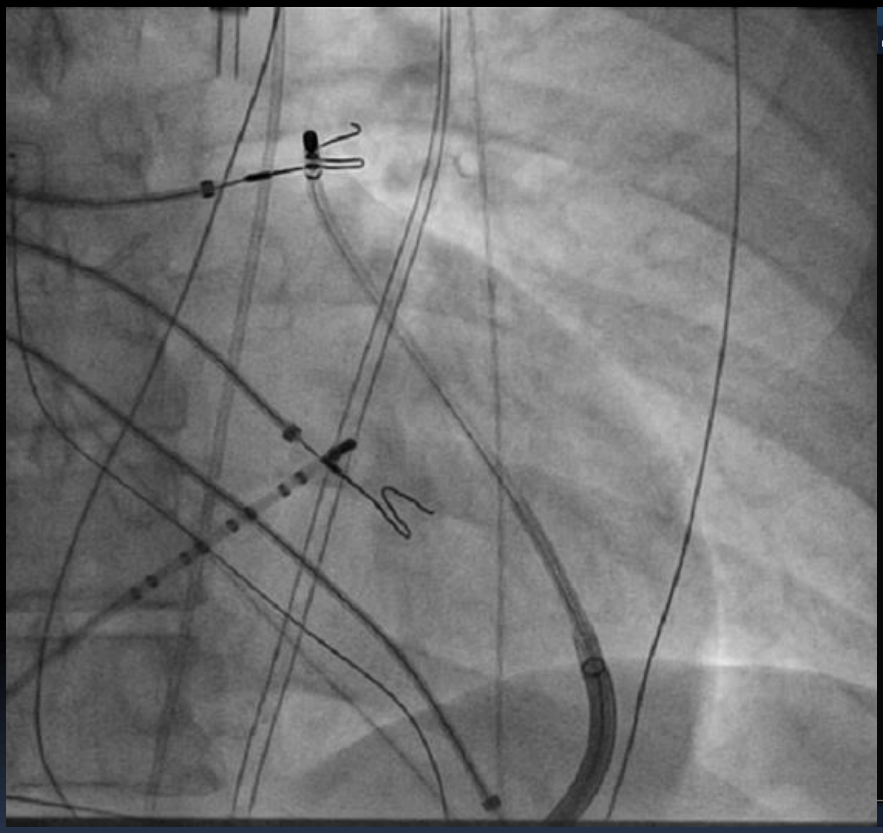
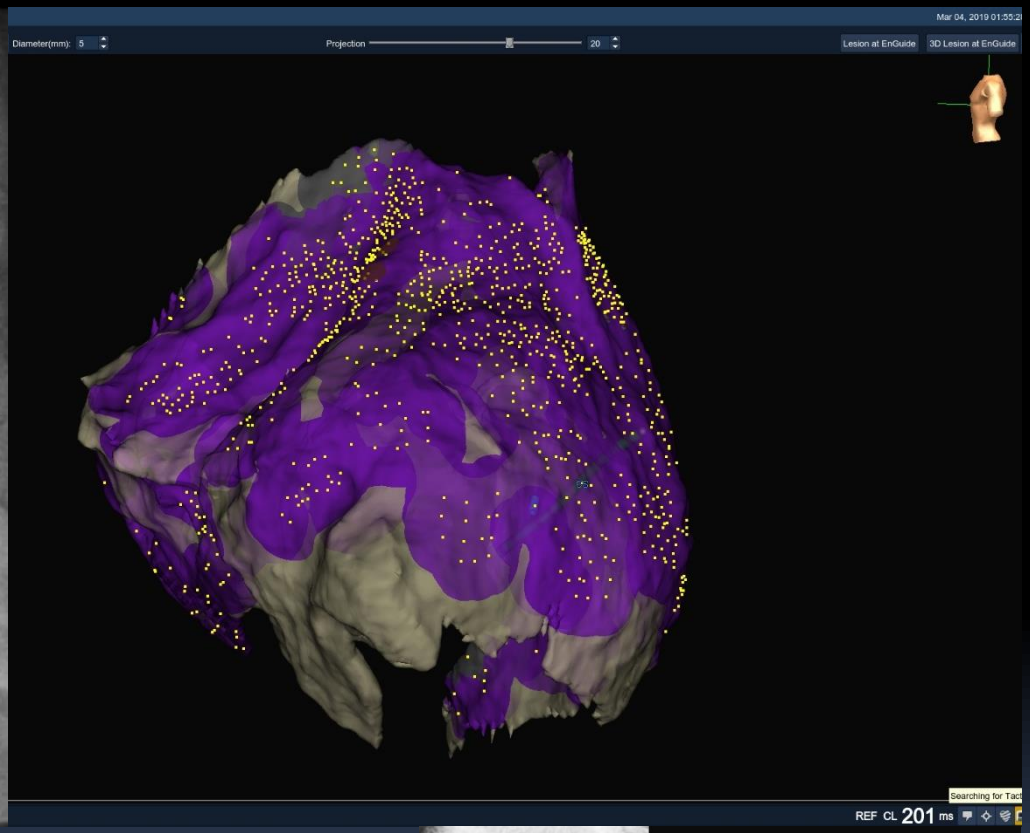
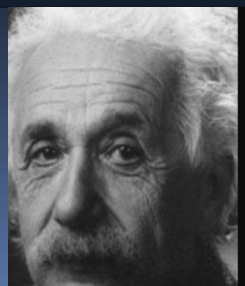
Ασθενής 44 ετών με 40.000 κοιλιακές συστολές κι αρχόμενη διάταση της ΑΚ με μέτρια συστολική δυσλειτουργία αυτής





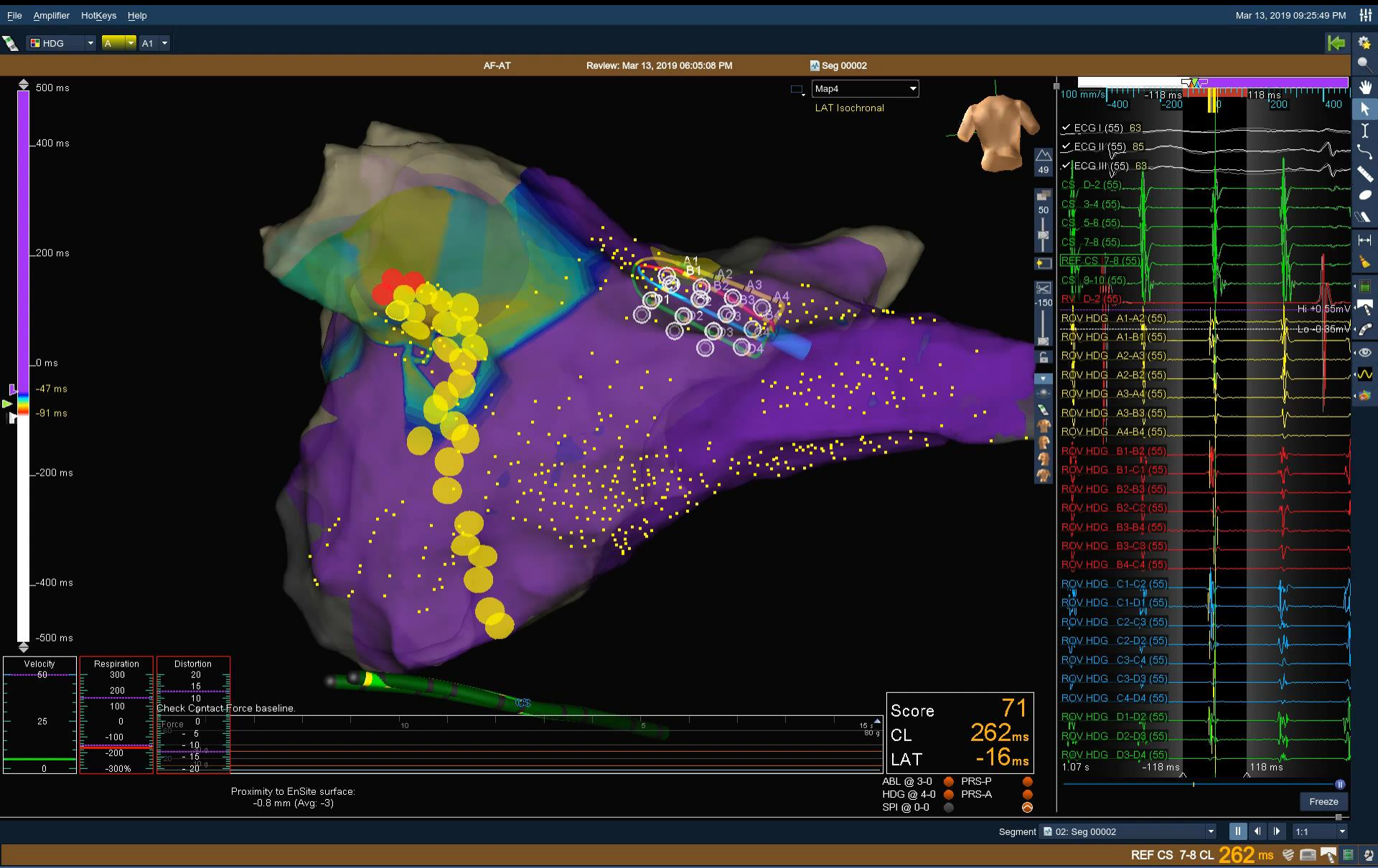


Failure is success in progress

— Albert Einstein —

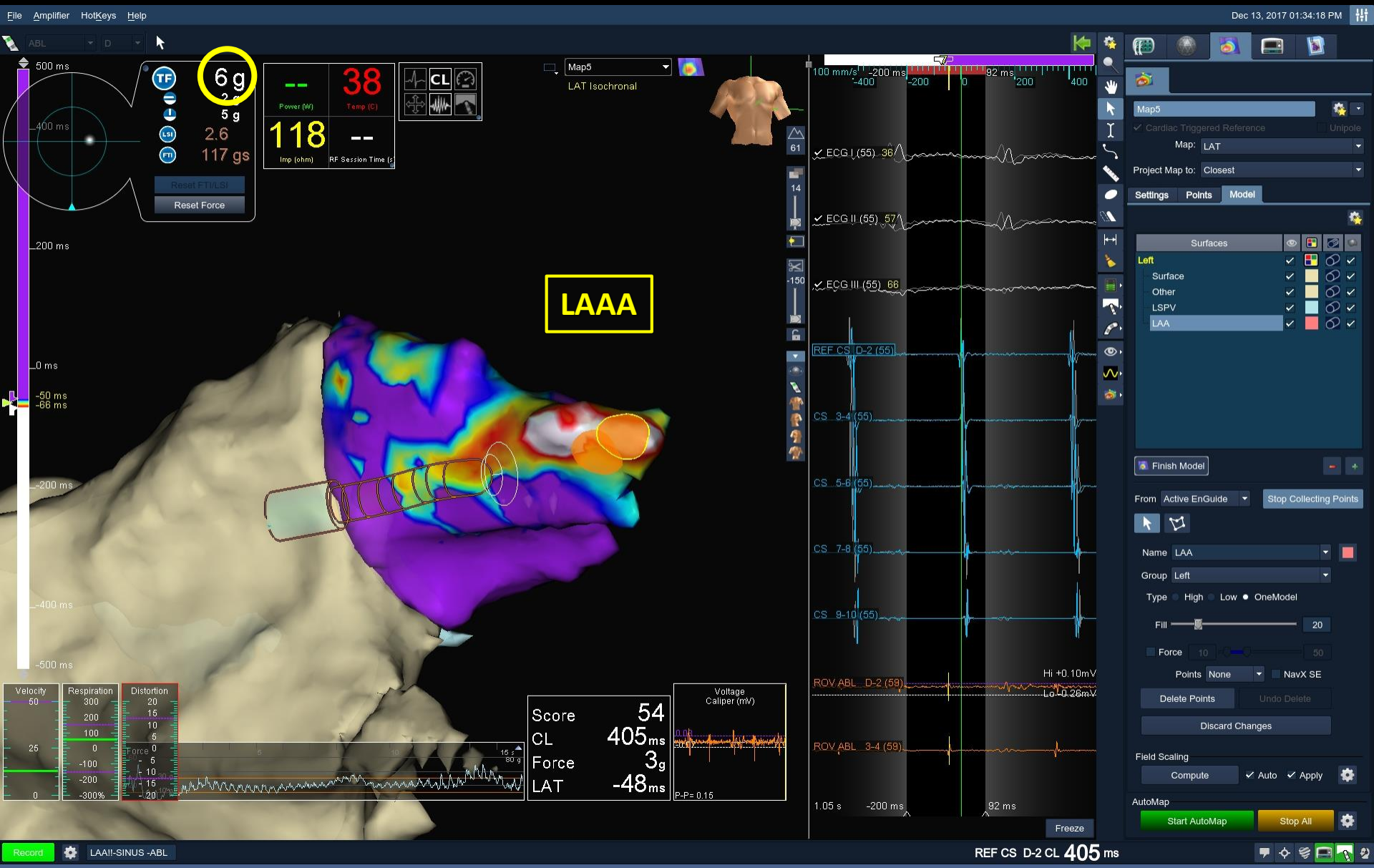
Αρχείο Γ.Ανδρικόπουλου, Μάρτιος 2019

Κολπική Ταχυκαρδία - Grid Mapping



Αρχείο Γ.Ανδρικόπουλου, Μάρτιος 2019

Κολπική ταχυκαρδία από το ωτίο του αριστερού κόλπου σε νεαρή ασθενή με ιδιαίτερη ανατομία



Αρχείο Γ.Ανδρικόπουλου, Δεκέμβριος 2017

Impact of Alcohol Abstinence in Moderate Drinkers with Atrial Fibrillation: Results from the Alcohol-AF Randomized Controlled Trial

Alex Voskoboinik, Jonathan M Kalman, Thomas Nicholls, Benedict Costello, Shane Nanayakkara, Sandeep Prabhu, Dion Stub, Sonia Azzopardi, Donna Vizi, Geoffrey Wong, Chrishan Nalliah, Hariharan Sugumar, Michael Wong, Emily Kotschet, David Kaye, Andrew J Taylor, Peter M Kistler (PI)

Melbourne, Australia

THE UNIVERSITY OF MELBOURNE

AlfredHealth

Baker HEART & DIABETES INSTITUTE

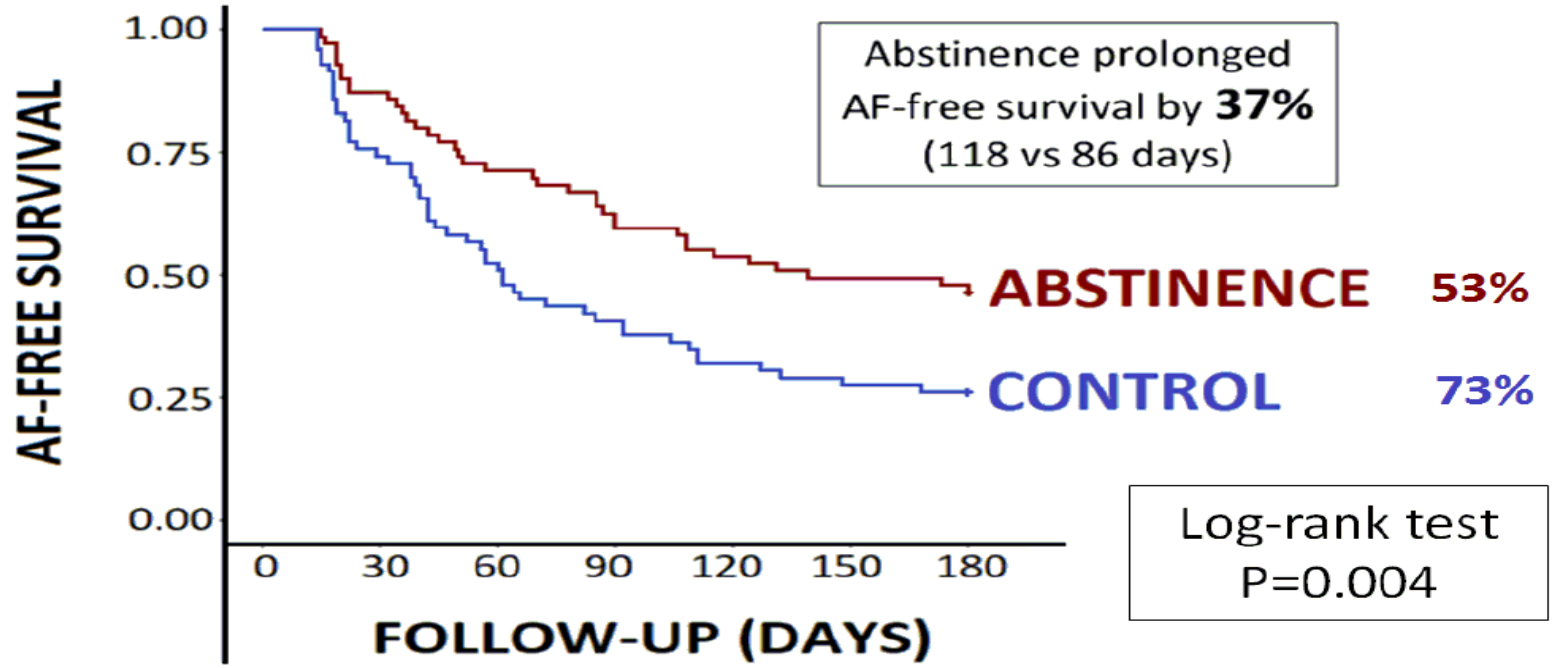
The Royal Melbourne Hospital

Australian New Zealand Clinical Trials Registry ACTRN 12616000256471

American College of Cardiology – 67th Scientific Sessions, March 18, 2019

Impact of Alcohol Abstinence in Moderate Drinkers with Atrial Fibrillation: Results from the Alcohol-AF Randomized Controlled Trial

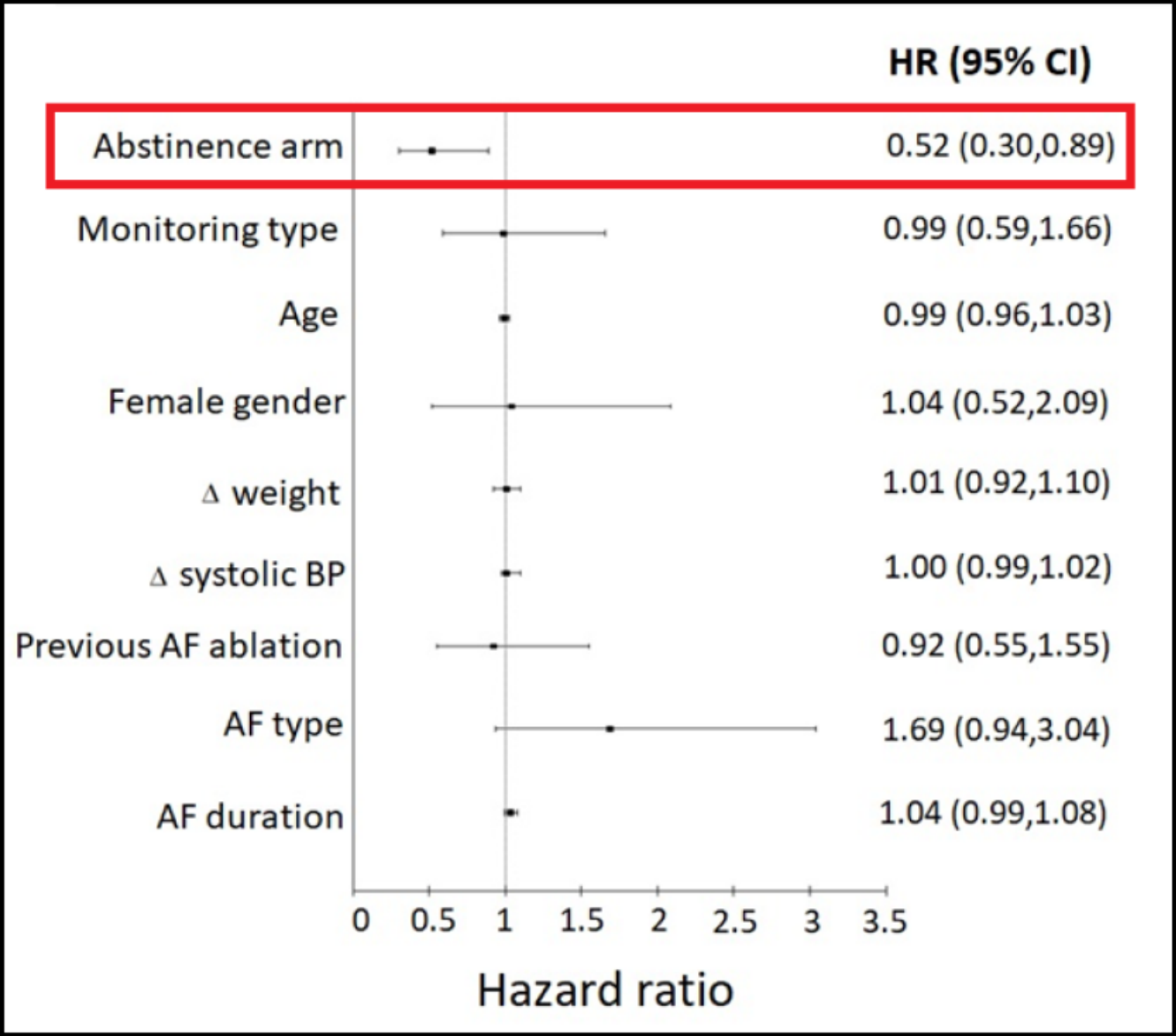
Time to AF recurrence



Number at risk

Abstinence	70	61	49	43	37	34	33
Control	70	51	36	28	22	19	18

Multivariate predictors of AF recurrence



ABSTINENCE ARM: Hazard ratio 0.52, 95% CI 0.30 – 0.89

Results of a Large-scale, App-based Study to Identify Atrial Fibrillation Using a Smartwatch:

The Apple Heart Study

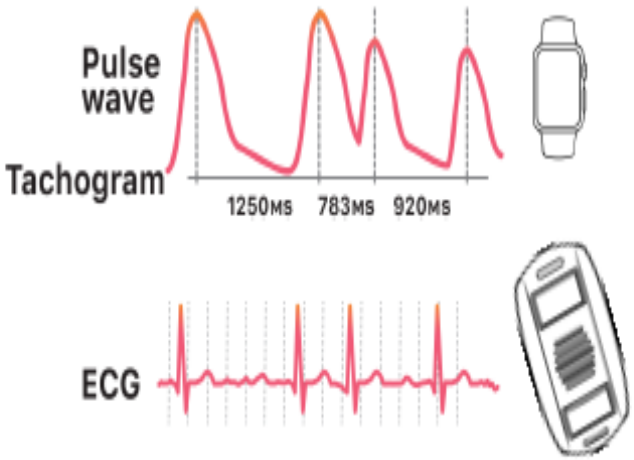
Mintu Turakhia MD MAS and Marco Perez MD
on behalf of the Apple Heart Study Investigators

NCT # 03335800

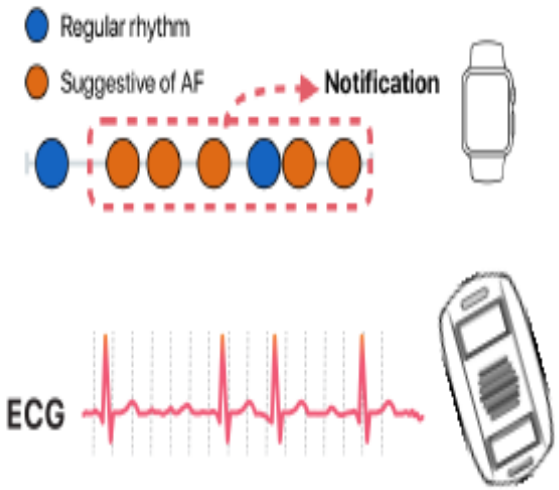
Stanford | MEDICINE

Positive Predictive Values

Irregular Tachograms



Irregular Pulse Notifications



	Afib on ECG Patch	Positive Tachograms	PPV* (97.5% CI)
Overall	1,489	2,089	0.71 (0.69–0.74)
ge ≥ 65	548	914	0.60 (0.56 – 0.64)

Afib on ECG Patch	Positive Notifications	PPV (95% CI)
72	86	0.84 (0.76–0.92)
25	32	0.78 (0.64 – 0.92)

Τα Μεγαδεδομένα (Big data) που συγκεντρώνουν ευρέως διαδεδομένες καταναλωτικές συσκευές θα αλλάξουν την επεμβατική αντιμετώπιση των αρρυθμιών

Ευχαριστώ την ομάδα ηλεκτροφυσιολογίας του Ερρίκος Ντυνάν Hospital Center

Ηλεκτροφυσιολόγοι

- Ανδρικόπουλος Γ.
- Παστρωμάς Σ.
- Συκιώτης Α.
- Κουρκούτη Π.
- Ταμπάκης Κ.

Νοσηλευτές

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- Αλεξοπούλου Γ.
- Γουργιώτη Ζ.
- Καμμένος Σ.
- Κληματσούδας Β.
- Μαυροδήμου Ν.

Αναισθησιολόγοι

- Μπούσουλα Μ.
- Ροζάκης Δ.

Τεχνολόγοι

- Κατσιφαράκης Σ.
- Ρουμάνη Μ.
- Στεφανάκη Ε.
- Χάιδος Γ.