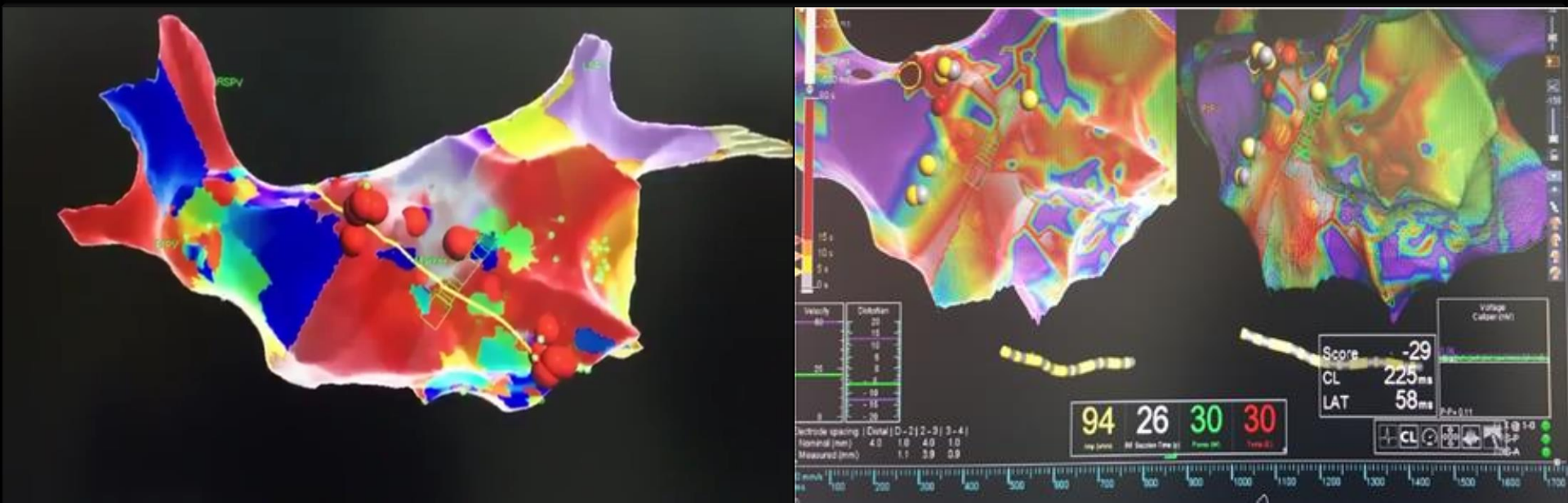


7. Atrial Fibrilasyon Zirvesi 2018

9 - 10 Şubat 2018
Kempinski Hotel The Dome
Belek, Antalya

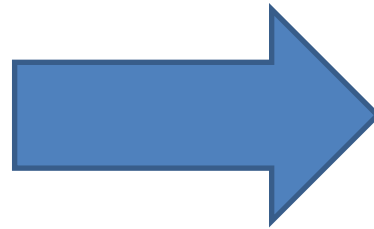
Star Af Çalışması Sonrasında Persistan AF Ablasyonu



Prof. Dr. Ahmet Taha Alper
Sağlık Bilimler Üni. Siyami Ersek Hastanesi

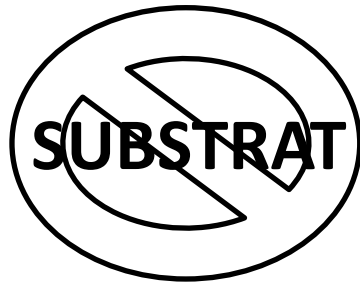
SVT'lerde ablasyon strajesi

- AVNRT
- WPW
- AVRT
- AT



SUBSTRAT
Ablasyonu

**HASTA:HOCAM BAŞLIYACAK GİBİ OLUYOR
AMA BAŞLAMİYOR!!!!**



TETİKLEYİCİLER

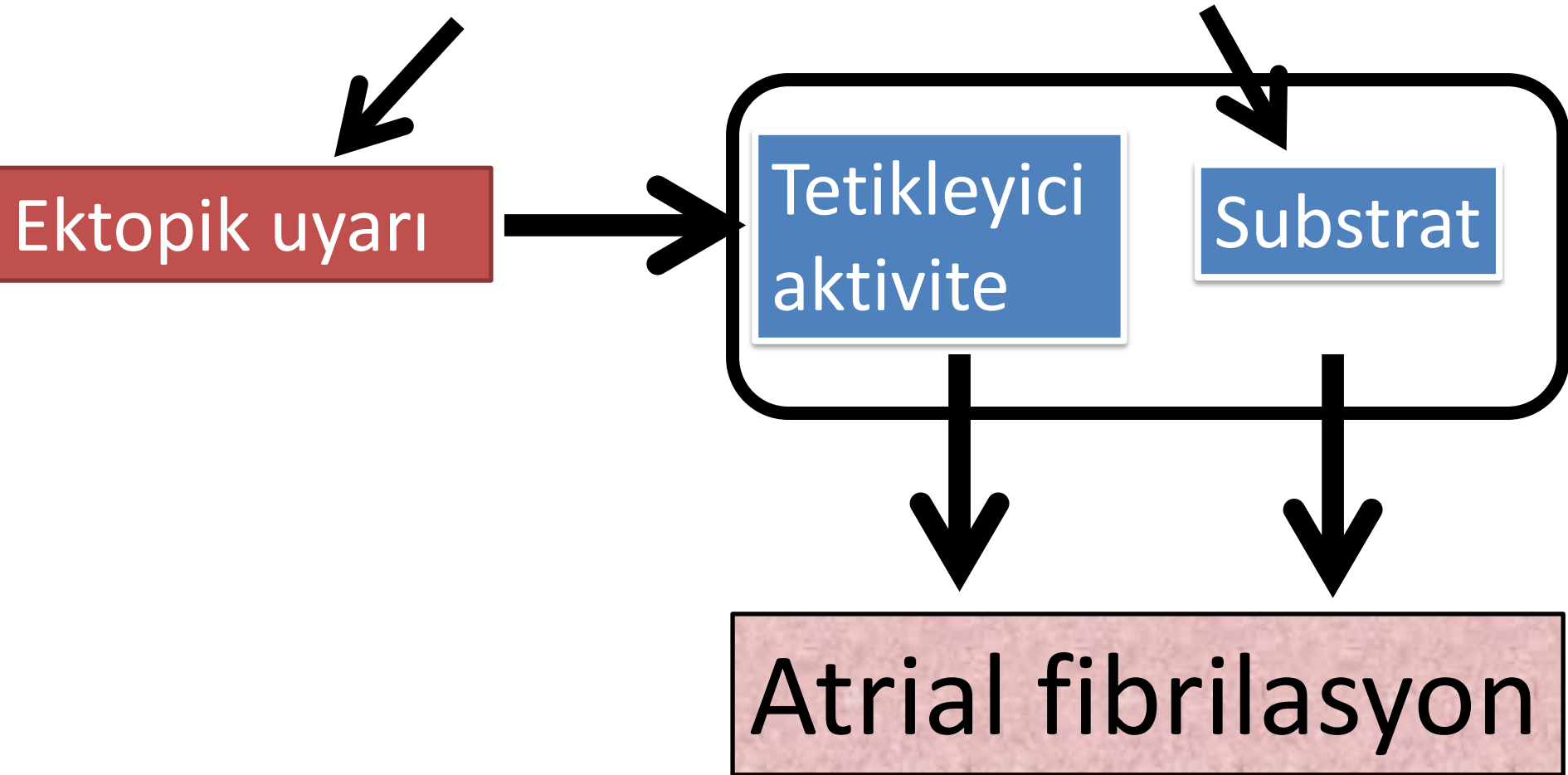
Yeniden Şekillenme

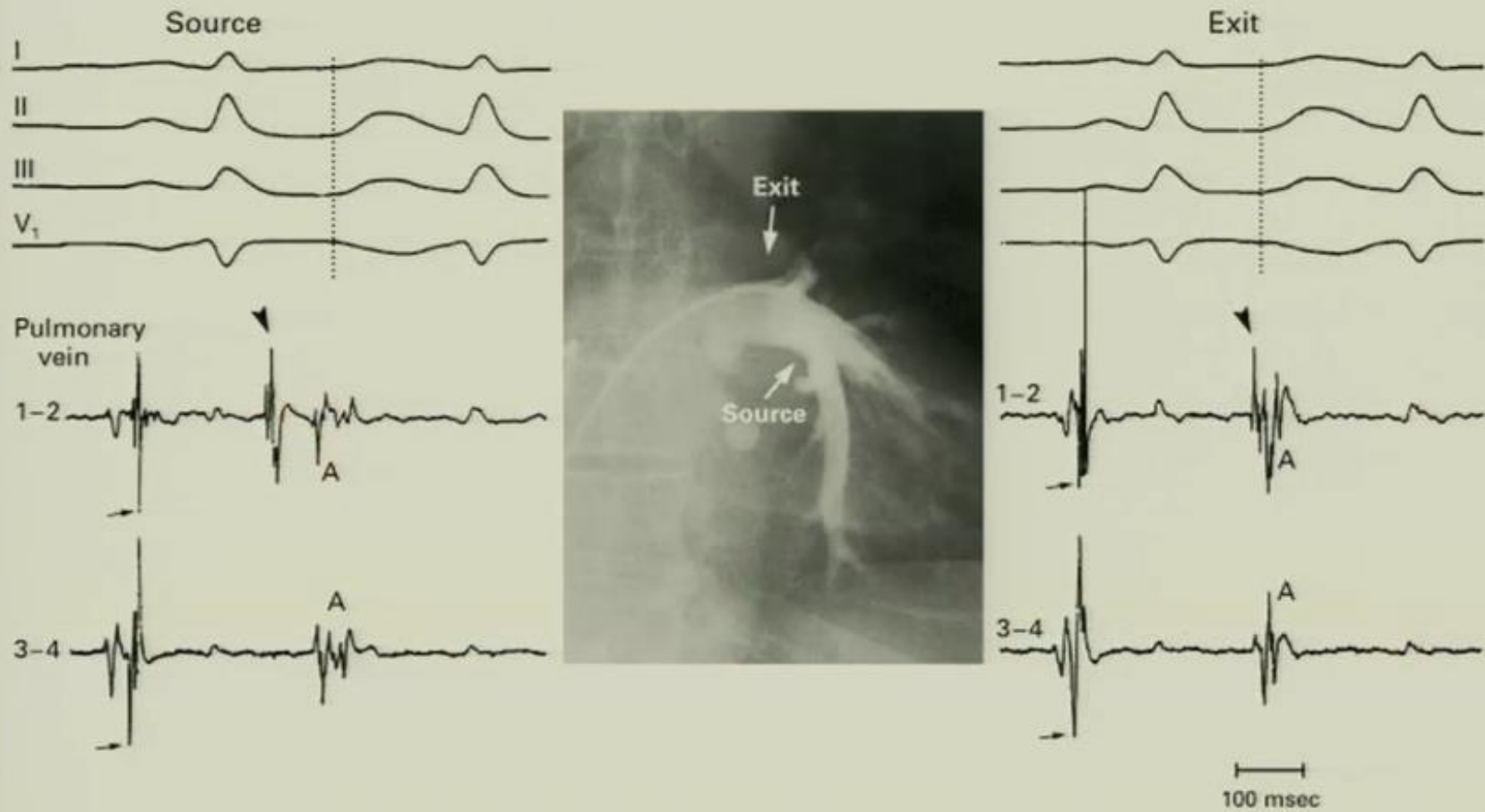
Ektopik uyarı

Tetikleyici
aktivite

Substrat

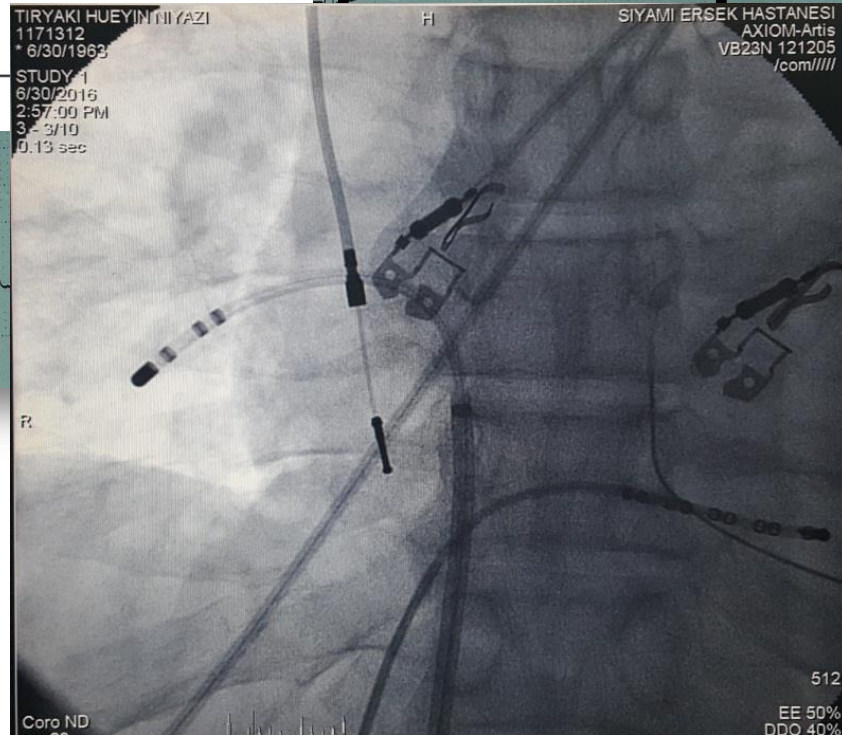
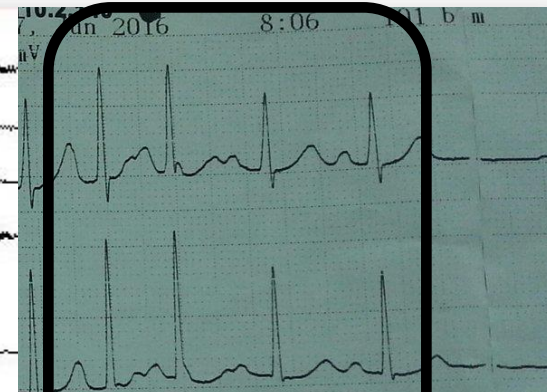
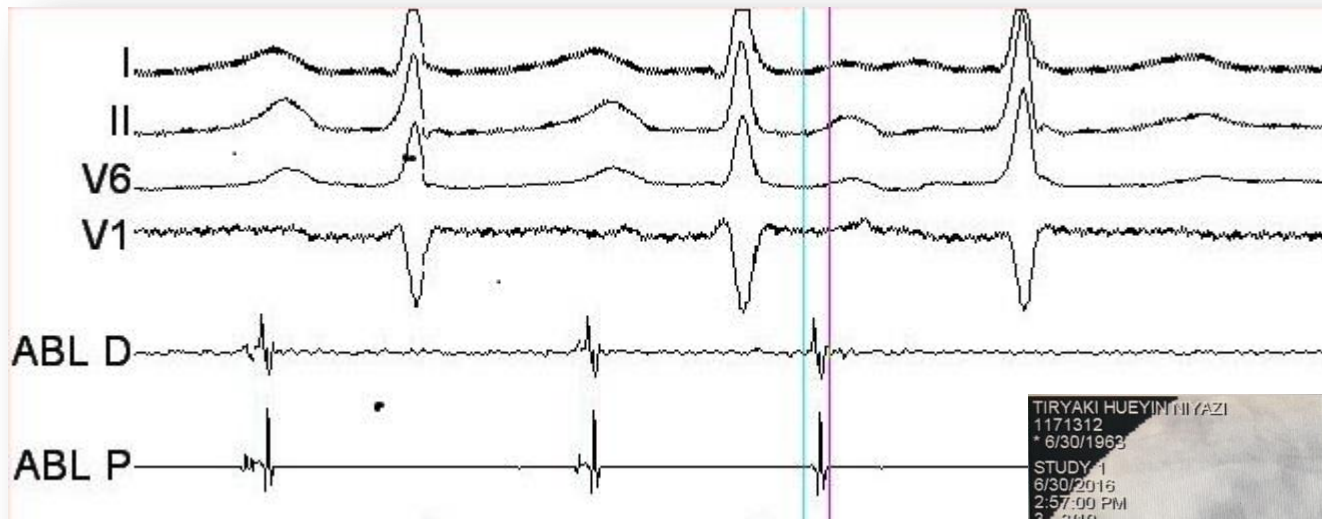
Atrial fibrilasyon

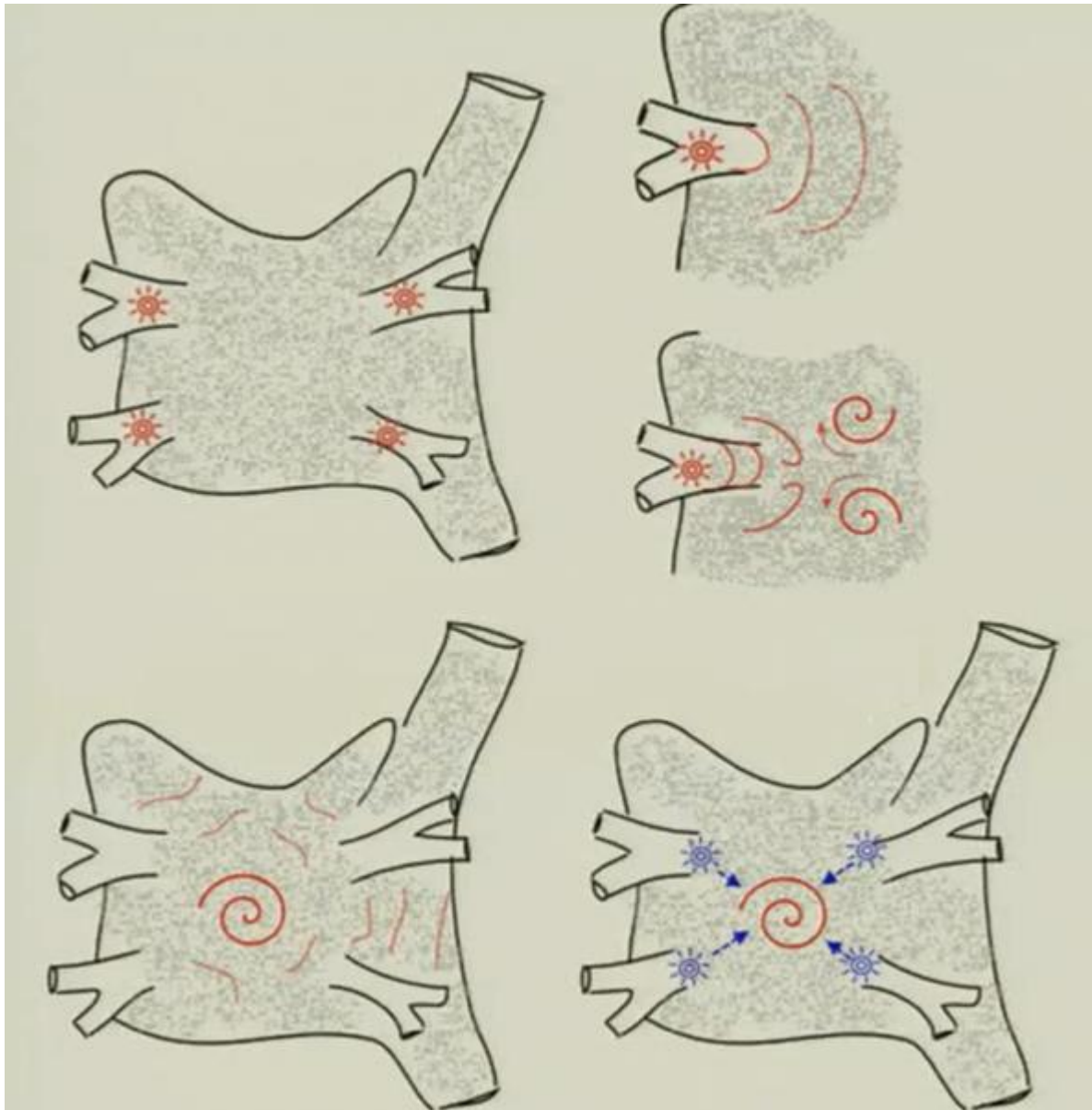




Haissagure et. NEJM 1998



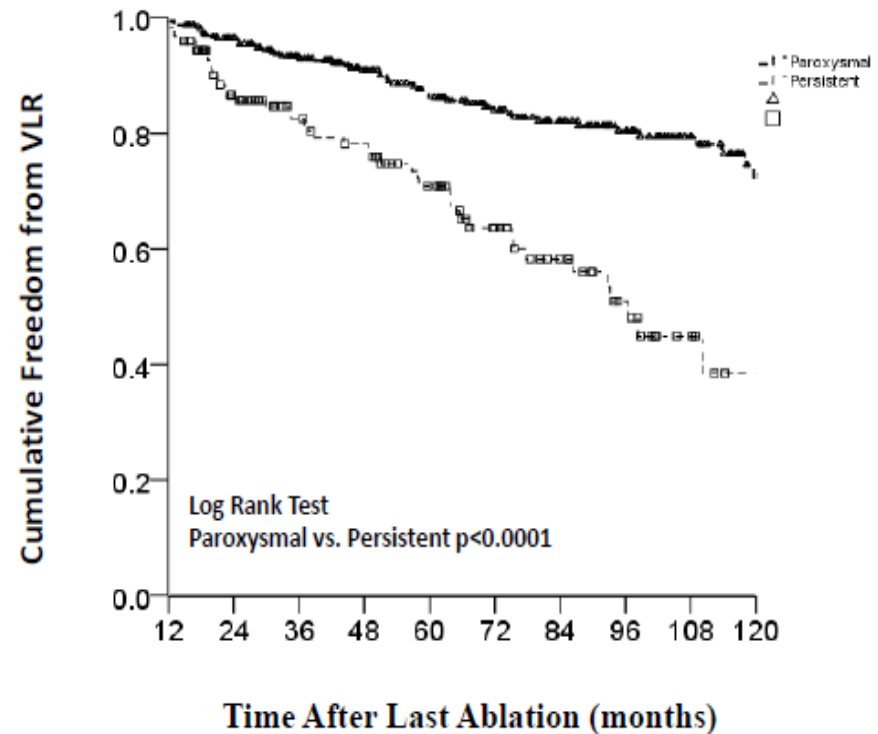




AF abl. sonrasında nüks

Paroksizmal AF için
2,5,10. yıllarda nüks
oranları sırasıyla
%3,%11,%27

Persistent AF için
2,5,10. yıllarda nüks
oranları sırasıyla
%13,%29,%62



Persistan AF

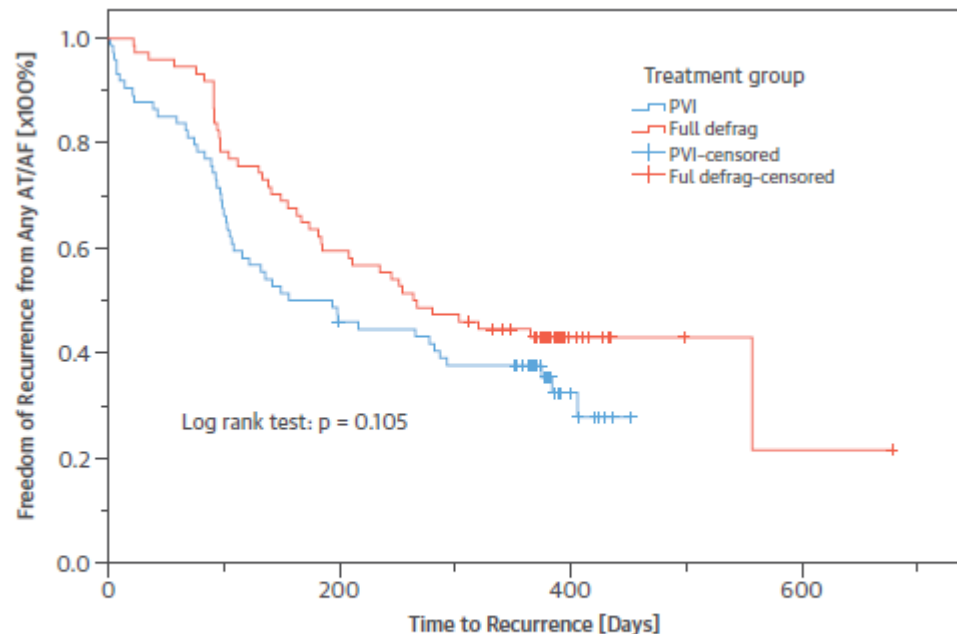
- Stepwise ablasyon
- GP Ablasyonu
- Rotor Ablasyonu
- CAFE Ablasyonu
- Roof ve MI line Ablasyonu

Pulmonary Vein Isolation Versus Defragmentation

The CHASE-AF Clinical Trial



Julia Vogler, MD,* Stephan Willems, MD,* Arian Sultan, MD,† Doreen Schreiber, MD,‡ Jakob Lüker, MD,† Helge Servatius, MD,§ Benjamin Schäffer, MD,* Julia Moser, MD,* Boris A. Hoffmann, MD,* Daniel Steven, MD†



Numbers at risk

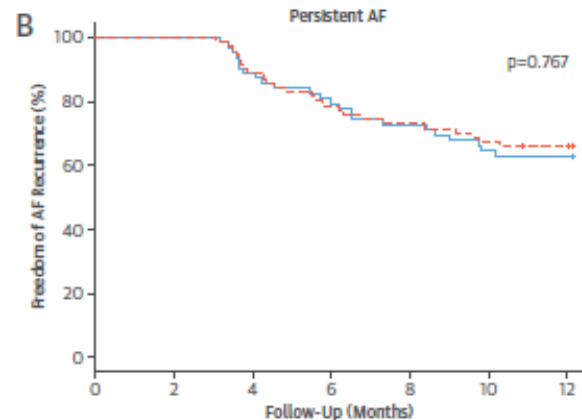
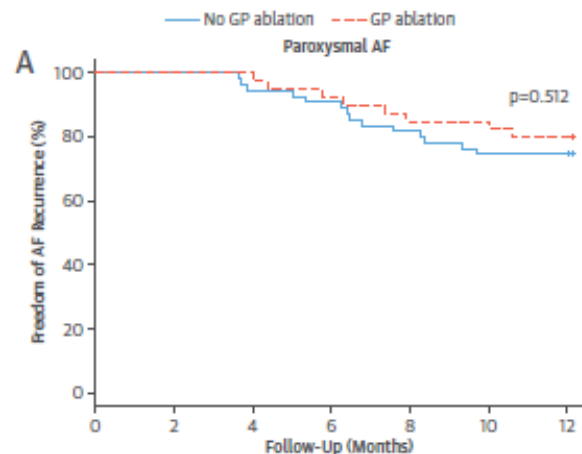
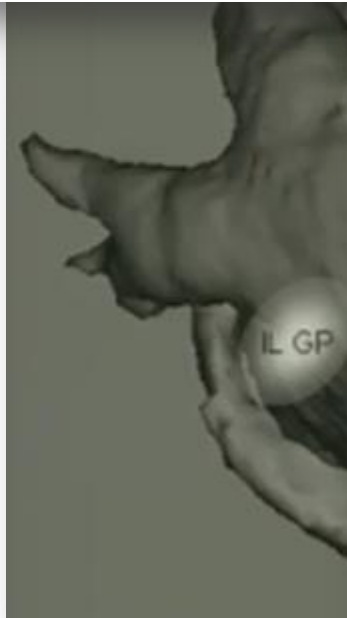
PVI	74	49	33	27	7	0	0
Full defrag	74	58	44	35	9	2	1

yonu ile SR

Ganglion Plexus Ablation in Advanced Atrial Fibrillation

The AFACT Study

Antoine H.G. Driessen, MD,^a Wouter R. Berger, MD,^a Sébastien P.J. Knul, MD,^b Nicoline W.E. van den Berg, MD,^b Jolien Neefs, MD,^b Femke R. Piersma, RN,^b Dean R.P.P. Chan Pin Yin, MD,^b Jonas S.S.G. de Jong, MD, PhD,^c WimJan P. van Boven, MD, PhD,^a Joris R. de Groot, MD, PhD^b



Major kanama
Sinus nod disfonk GP abl sık
PM impl.

Treatment of Atrial Fibrillation by the Ablation of Localized Sources

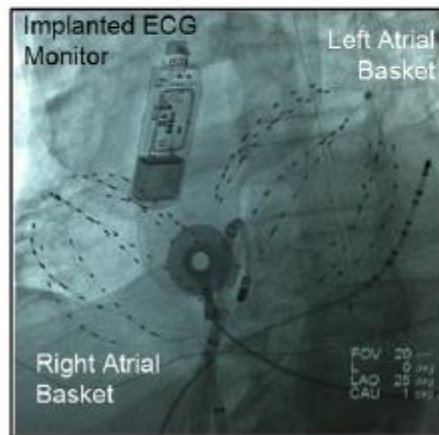
CONFIRM (Conventional Ablation for Atrial Fibrillation
With or Without Focal Impulse and Rotor Modulation) Trial

Sanjiv M. Narayan, MD, PhD,*† David E. Krummen, MD,*† Kalyanam Shivkumar, MD, PhD,‡
Paul Clopton, MS,† Wouter-Jan Rappel, PhD,§ John M. Miller, MD||

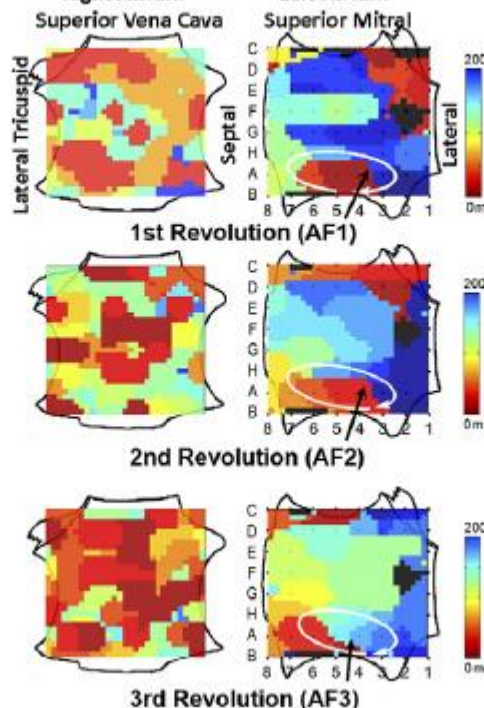
A ECG and Intracardiac Signals of AF



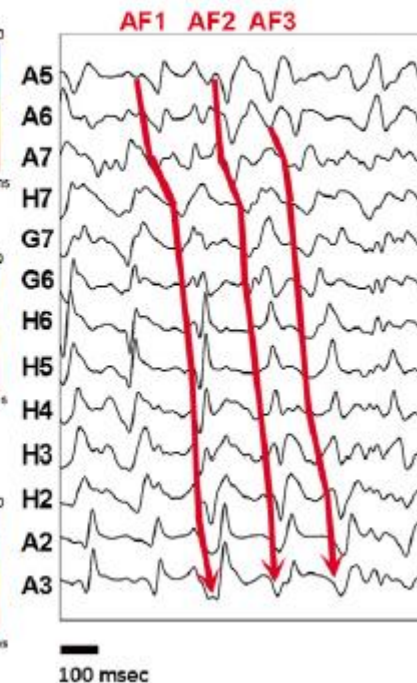
B Basket Catheters in Both Atria



C AF Rotor in Low Left Atrium
Right Atrium Left Atrium



D Processed Intracardiac Signals
Activation Along Rotor Path



Impact of Rotor Ablation in



ESC

European Society
of Cardiology

Europace (2018) 0, 1–8

doi:10.1093/europace/eux370

CLINICAL RESEARCH

Clinical impact of rotor ablation in atrial fibrillation: a systematic review

Ramanathan Parameswaran^{1,2}, Aleksandr Voskoboinik^{1,3,4}, Alexandra Gorelik²,
Geoffrey Lee^{1,2}, Peter M. Kistler^{2,3,4}, Prashanthan Sanders⁵, and
Jonathan M. Kalman^{1,2*}

Conclusion

The wide variability in success rate between different centres performing rotor ablations suggests that the optimal ablation strategy, particularly targeting rotors, is unclear. Results from randomized studies are necessary before this technique can be considered as an established clinical tool.

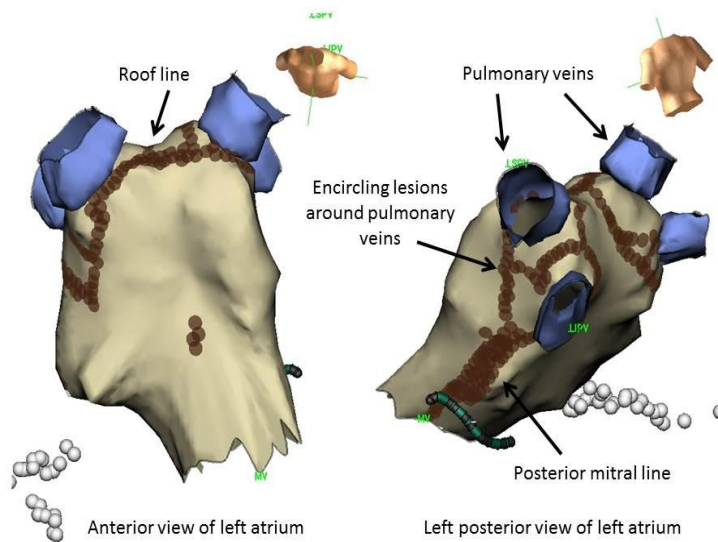
¹Western Reserve University School of Medicine, Cleveland, Ohio; ²Division of Cardiology, Stanford University, Stanford, California; and the ³Department of Internal Medicine, Dell Medical School, University of Texas, Austin, Texas. Dr. Parameswaran has received speaking and consulting fees from Topcon. Dr. Voskoboinik consults for Biosense Webster and Medtronic. Dr. Sanders has received speaking fees from Biosense Webster and St. Jude Medical. Dr. Di Biase is a consultant for Biosense Webster, Boston Scientific, Amgen, and St. Jude Medical, and has received speaking and travel honoraria from Medtronic, Boston Scientific, Amgen, Abbott, Janssen, Pfizer, and Medtronic. Dr. Natale has received speaking honoraria from Boston Scientific, Biosense Webster, St. Jude Medical, Medtronic, and Medtronic, and consults for Biosense Webster, St. Jude Medical, Janssen, and Lifesearch. All other authors have reported that they have no relationships relevant to the contents of this paper to disclose.

STAR AF 2 METOT

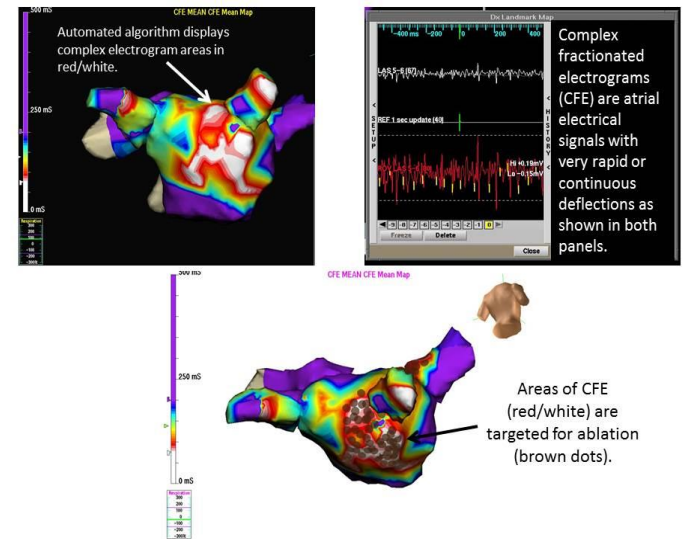
TEK BAŞINA PVI

PVI+ROOF,MI LINE

PVI+CAFE



11:53:40:0790



STAR AF 2 SONUÇLARI

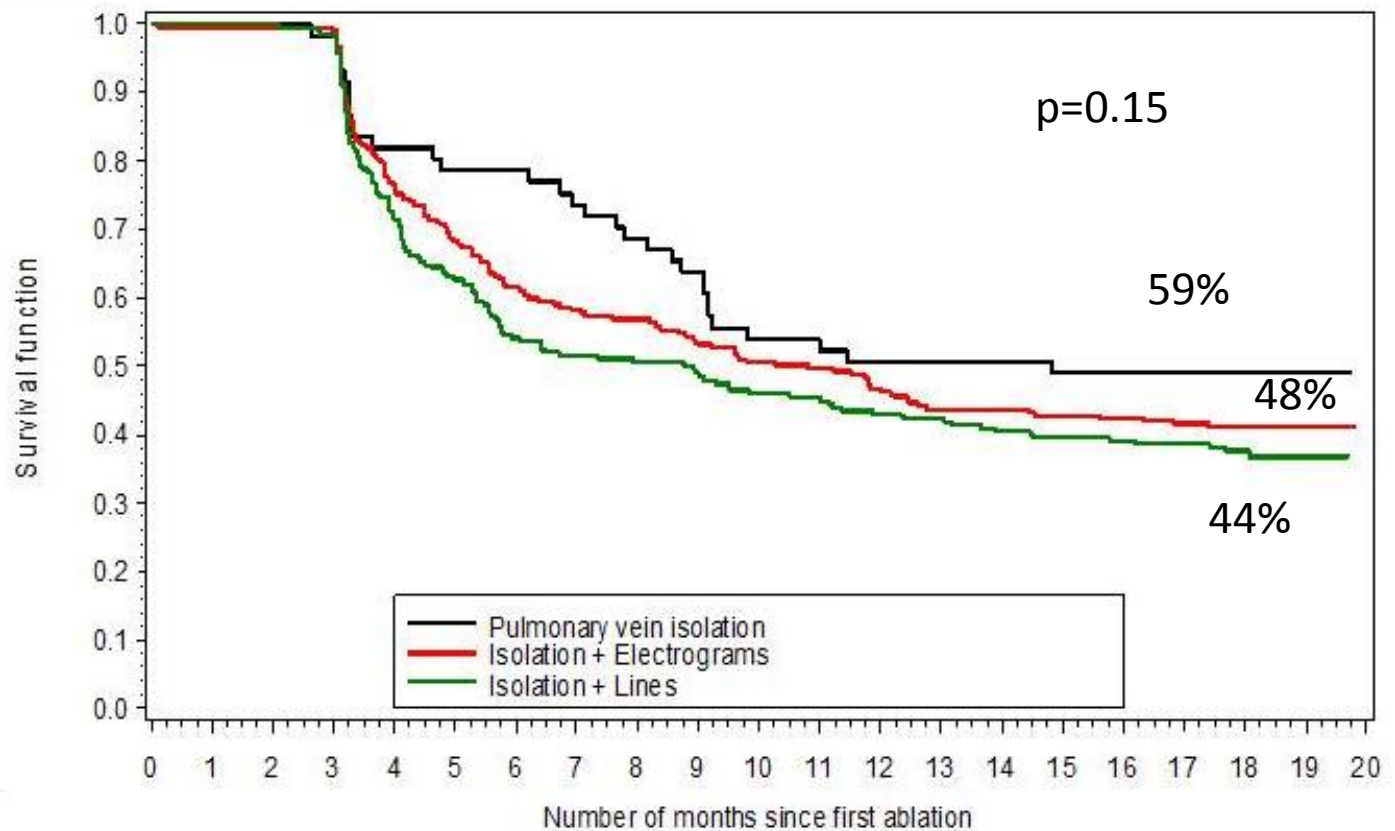
PVI %97

CAFE %80 elimine edildi

ROOF blok %93, MI blok %75

	PVI	PVI+CFE	PVI+Lines	P değeri
İşlem zamanı	166.95+ 54.83	229.16 83.20	222.56 89.37	<0.0001
Haritalama zamanı	13.89 6.64	18.75 14.01	14.38 7.68	<0.0001
Floroskopi zamanı	29.35 16.21	42.11 21.70	40.91 24.97	<0.0003

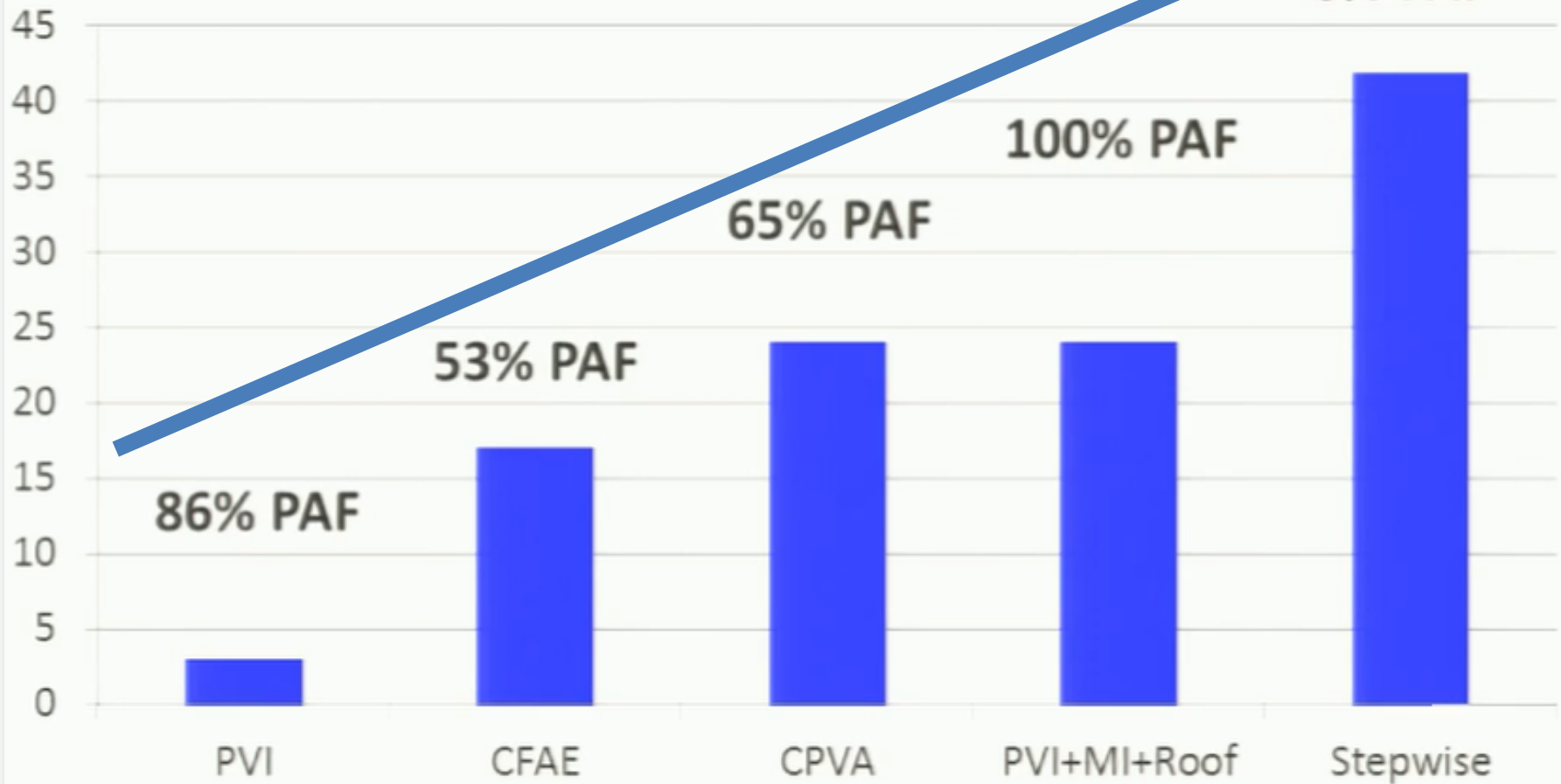
Star AF II Verma et al



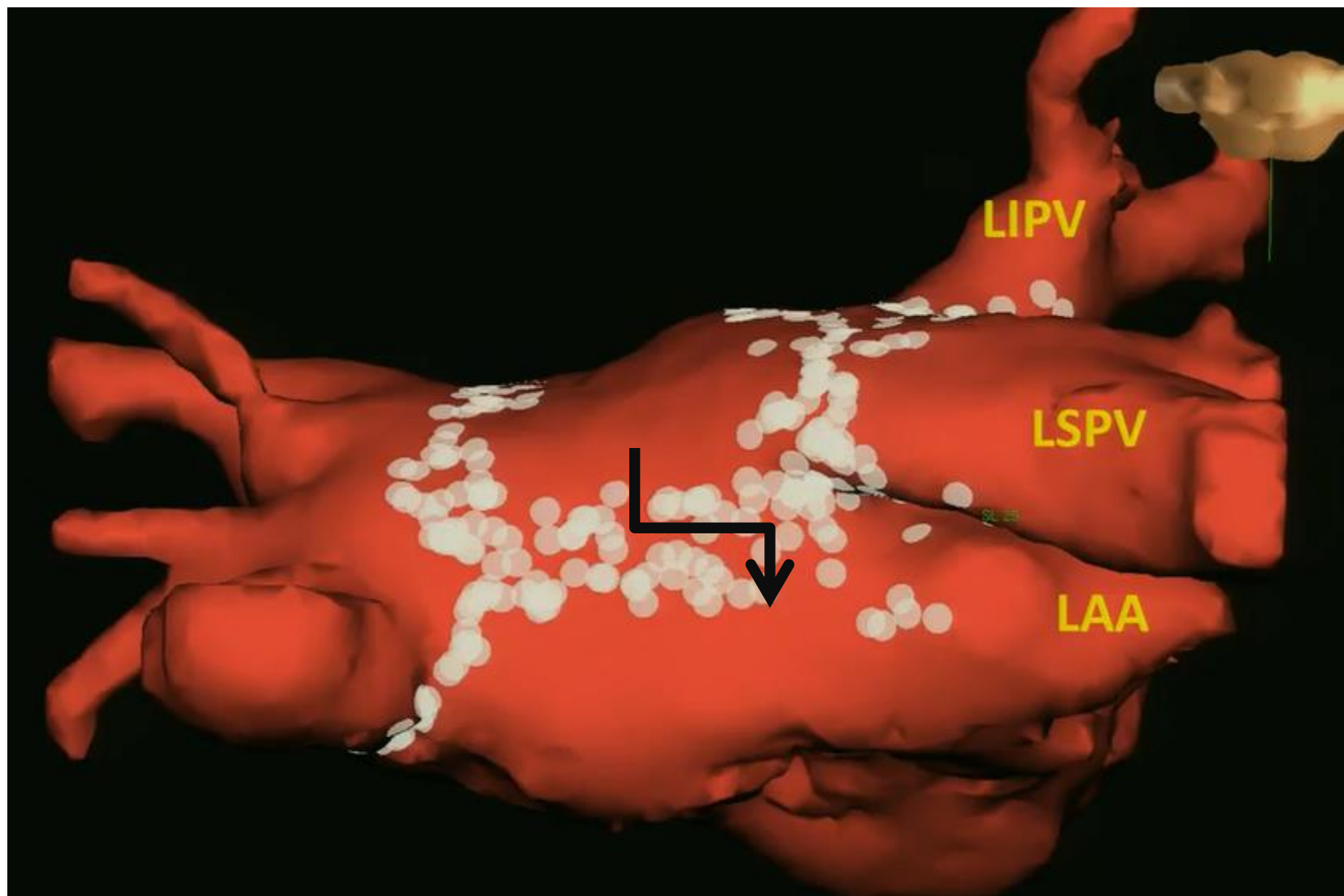
No. at Risk

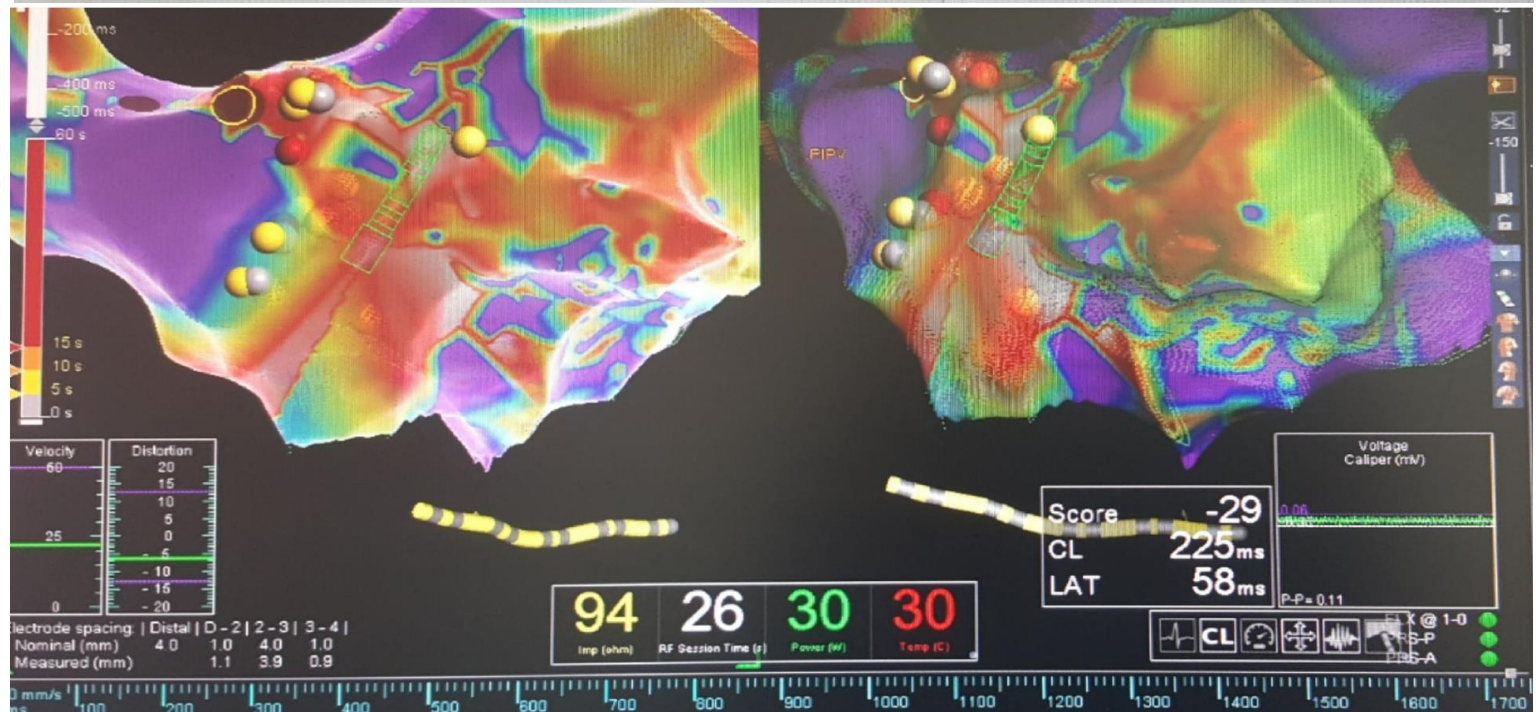
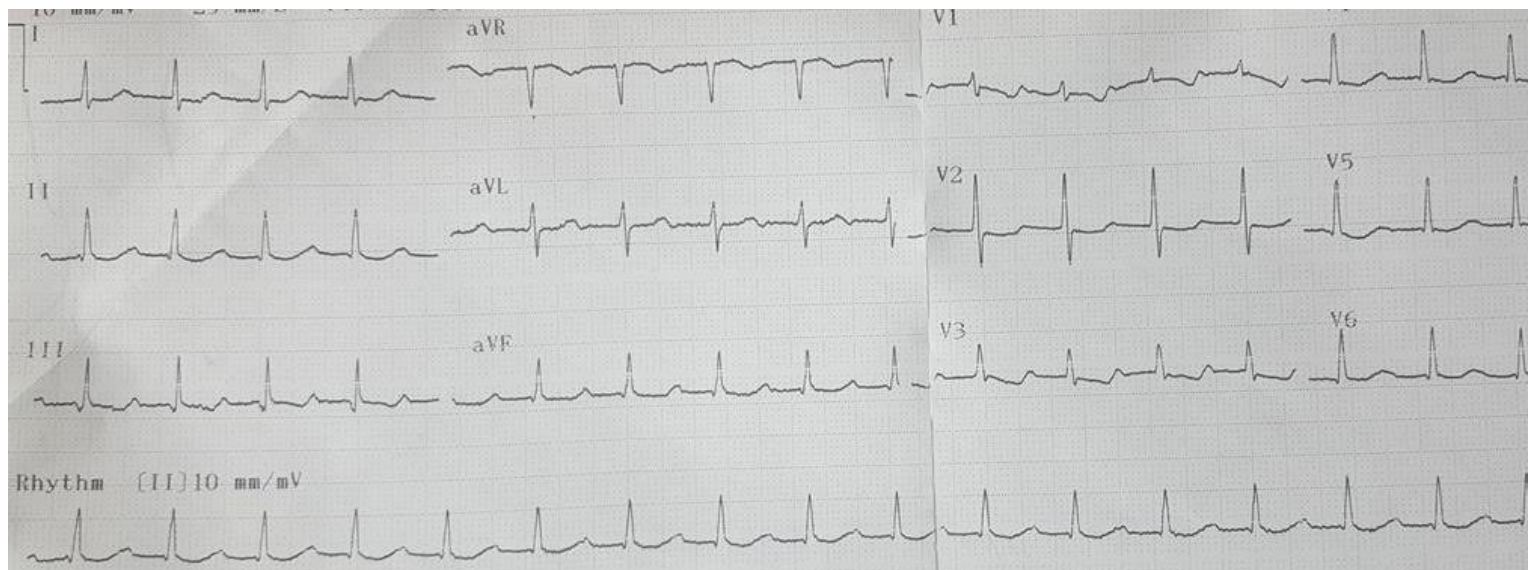
Pulmonary vein isolation	61	60	50	41	36	23
Isolation + Electrograms	244	242	161	137	124	72
Isolation + Lines	244	240	152	133	115	57

Atrial Taşikardi Sıklılığı

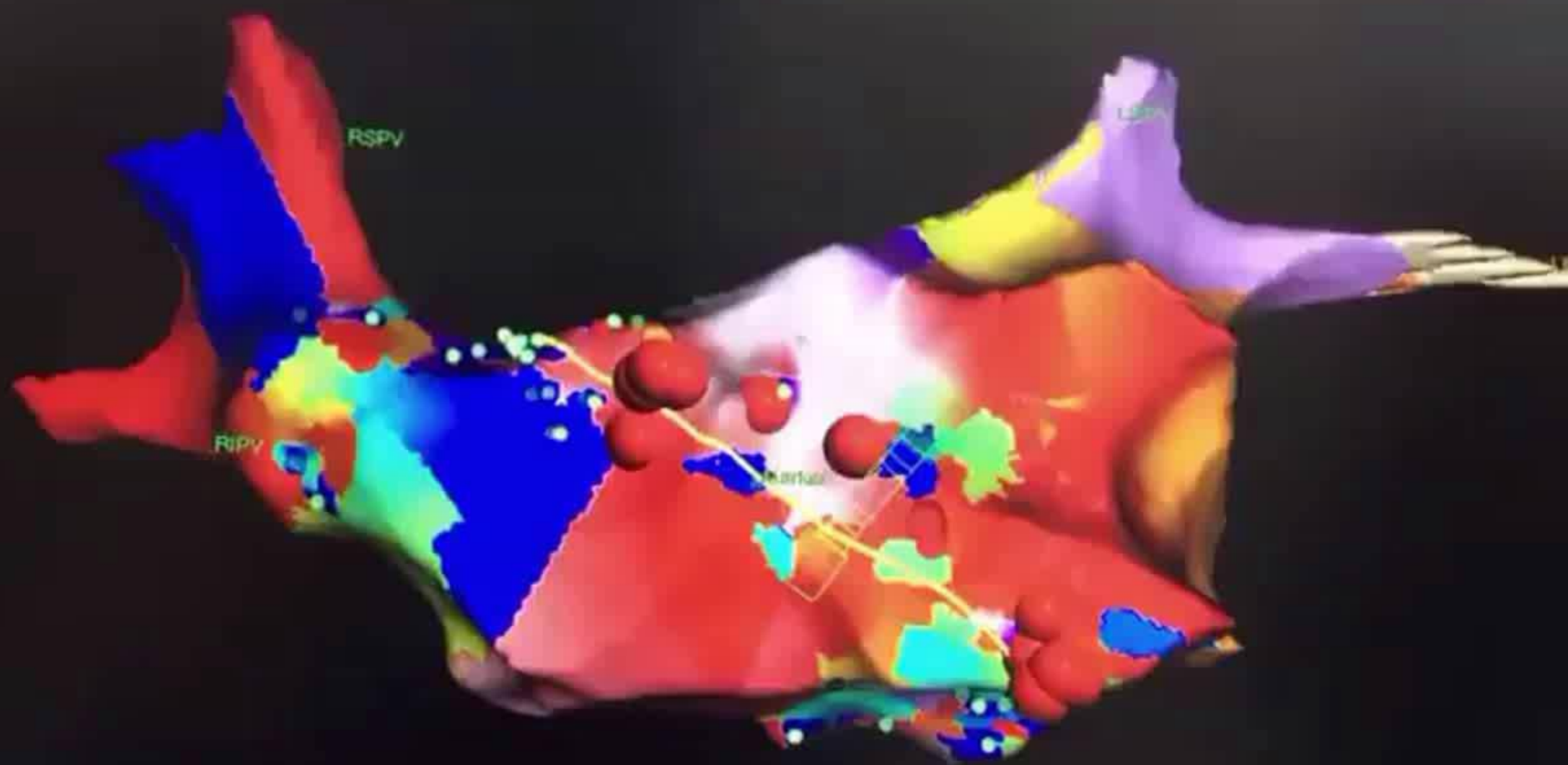


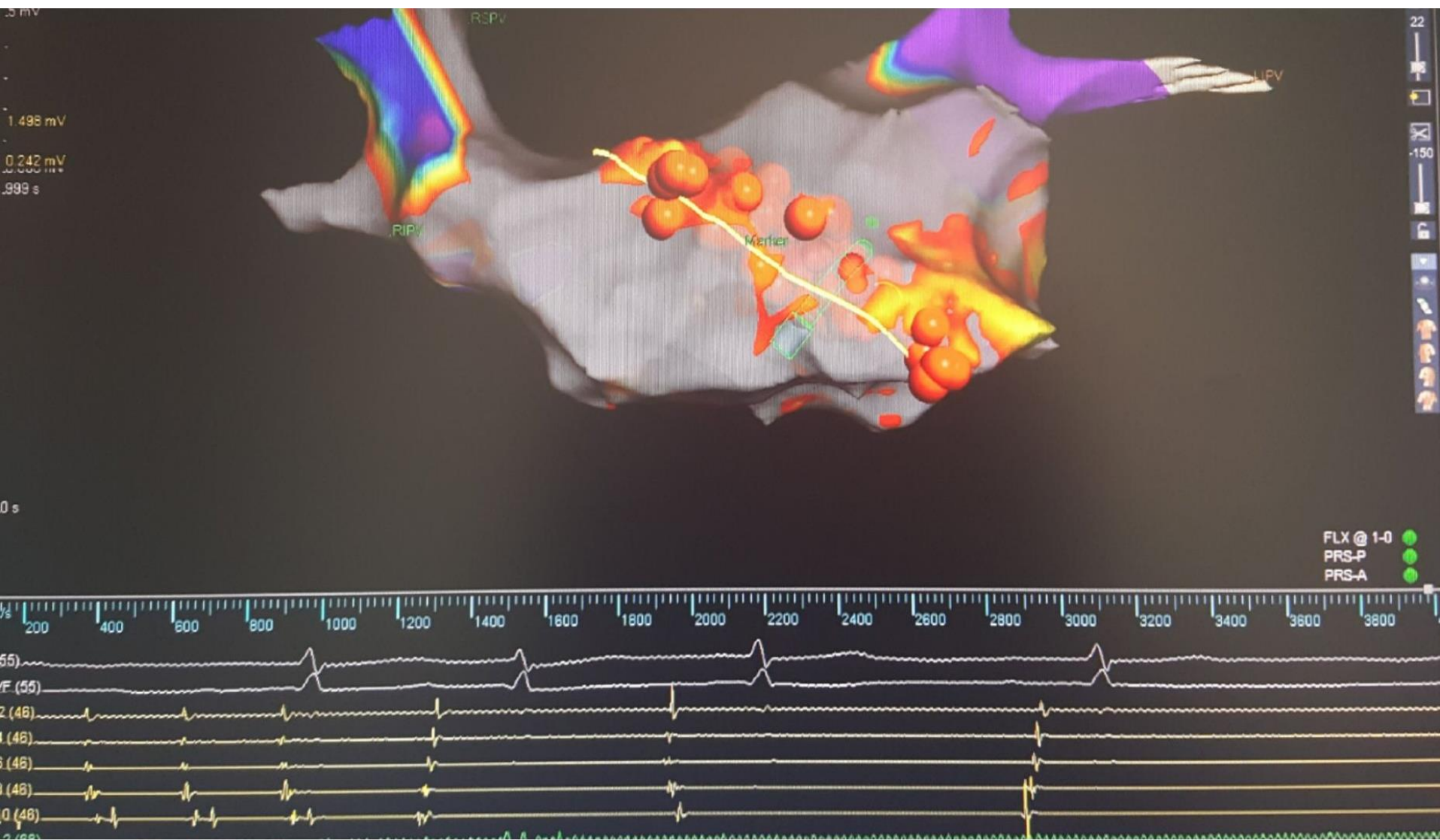
Gerstenfeld Circ 2004
Nademanee JACC 2005
Chugh HR 2005
Sawney Circ EP 2010
O'Neil EHJ 2009





LAT Isochronal





ZOMBİ ABLASYONU

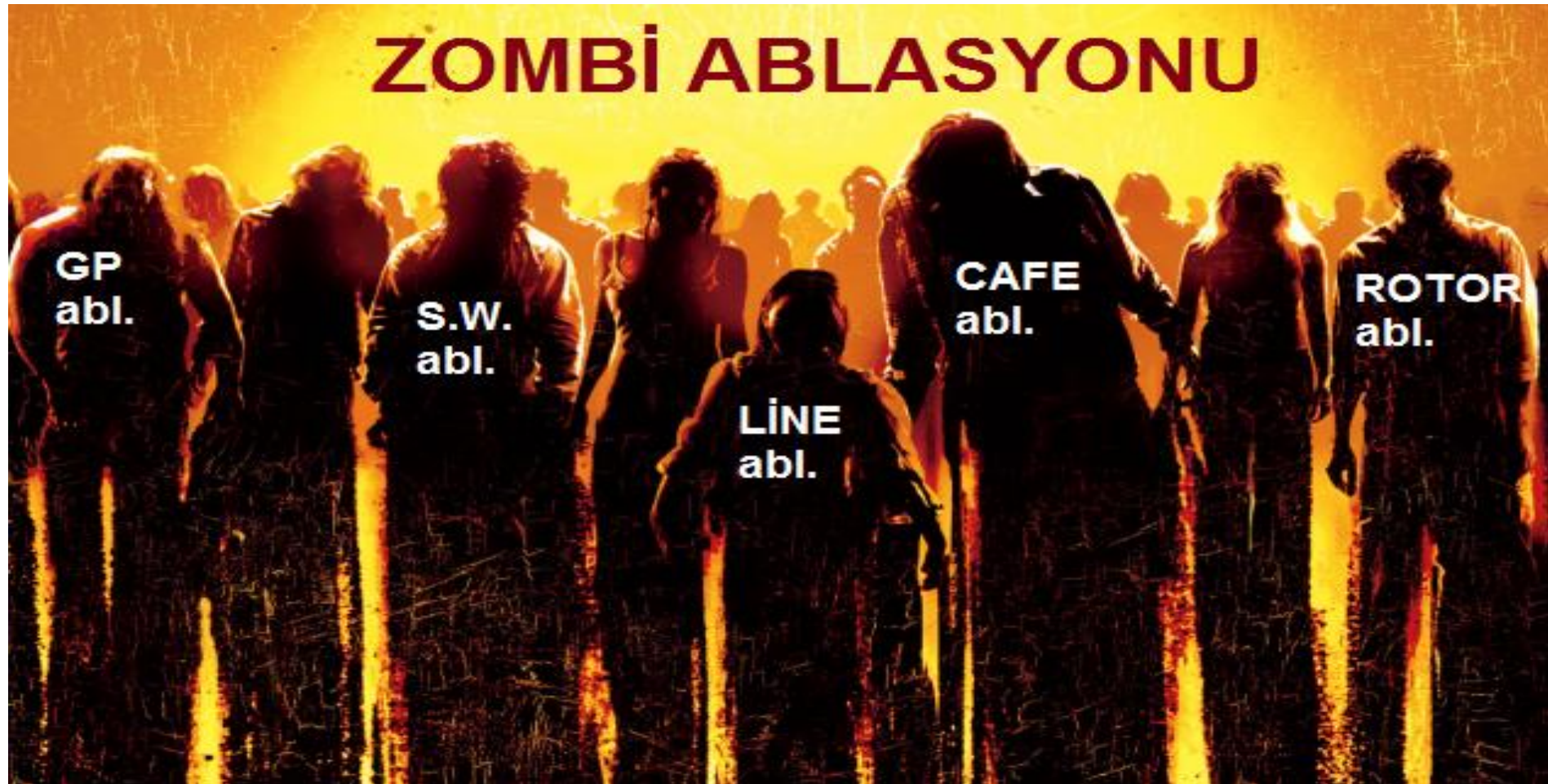
GP
abl.

S.W.
abl.

LINE
abl.

CAFE
abl.

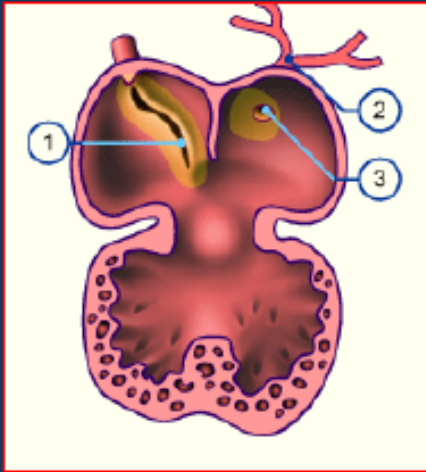
ROTOR
abl.



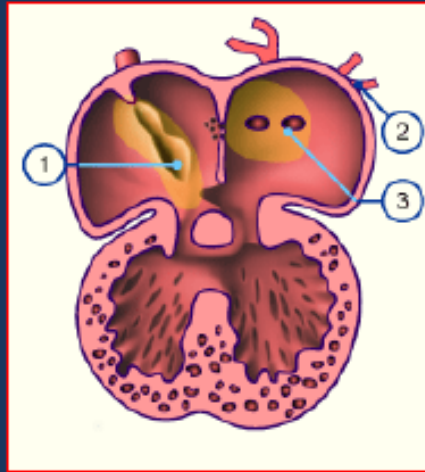
Elimizde Ne Var?

- PW izolasyonu (substrat ve trigger ablasyonu)
- Düşük voltaj alanlar (substrat ablasyonu)
- LAA izolasyonu (trigger ablasyonu)

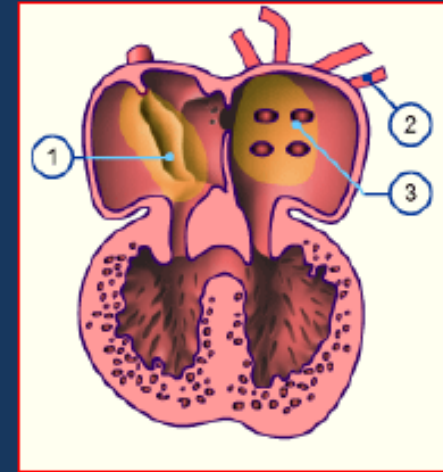
PW izolasyonu



32gün



34gün

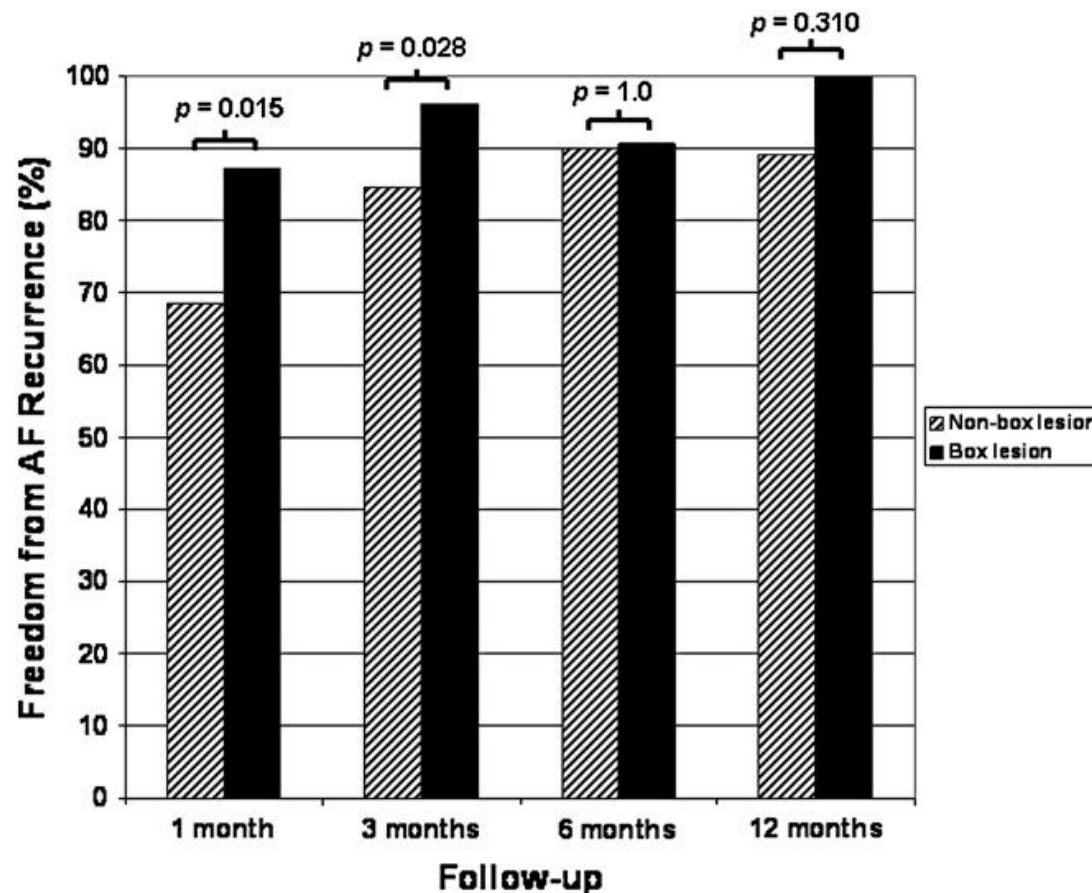


36gün

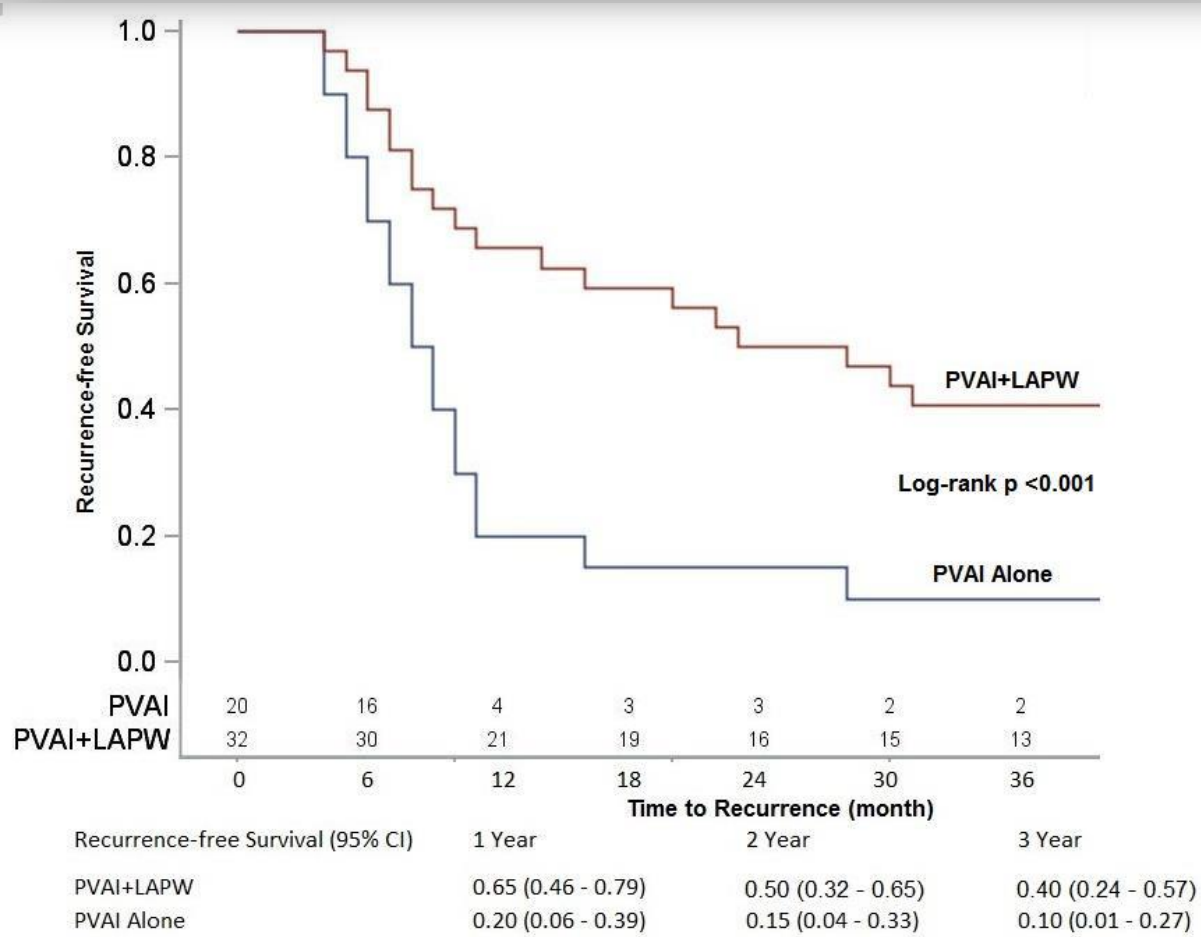
PW PV ile aynı dokudan gelişmektedir

Isolating the entire posterior left atrium improves surgical outcomes after the Cox maze procedure

Rochus K. Voeller, MD, Marci S. Bailey, RN, Andreas Zierer, MD, Shelly C. Lall, MD, Shun-ichiro Sakamoto, MD, Kristen Aubuchon, Jennifer S. Lawton, MD, Nader Moazami, MD, Charles B. Huddleston, MD, Nabil A. Munfakh, MD, Marc R. Moon, MD, Richard B. Schuessler, PhD, and Ralph J. Damiano, Jr, MD



Proven isolation of the pulmonary vein antrum with or without left atrial posterior wall isolation in patients with persistent atrial fibrillation



Tek çok merkezli randomize çalışma

ClinicalTrials.gov

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☐ Save this study

Comparison of Pulmonary Vein Ablation With or Without Left Atrial Posterior Wall Ablation for Persistent AF (PIVoTAL) (PIVoTAL)



The safety and scientific validity of this study is the responsibility of the study sponsor and investigators. Listing a study does not mean it has been evaluated by the U.S. Federal Government. [Know the risks and potential benefits](#) of clinical studies and talk to your health care provider before participating. Read our [disclaimer](#) for details.

ClinicalTrials.gov Identifier: NCT03057548

[Recruitment Status](#) ⓘ : Recruiting

[First Posted](#) ⓘ : February 20, 2017

[Last Update Posted](#) ⓘ : April 25, 2017

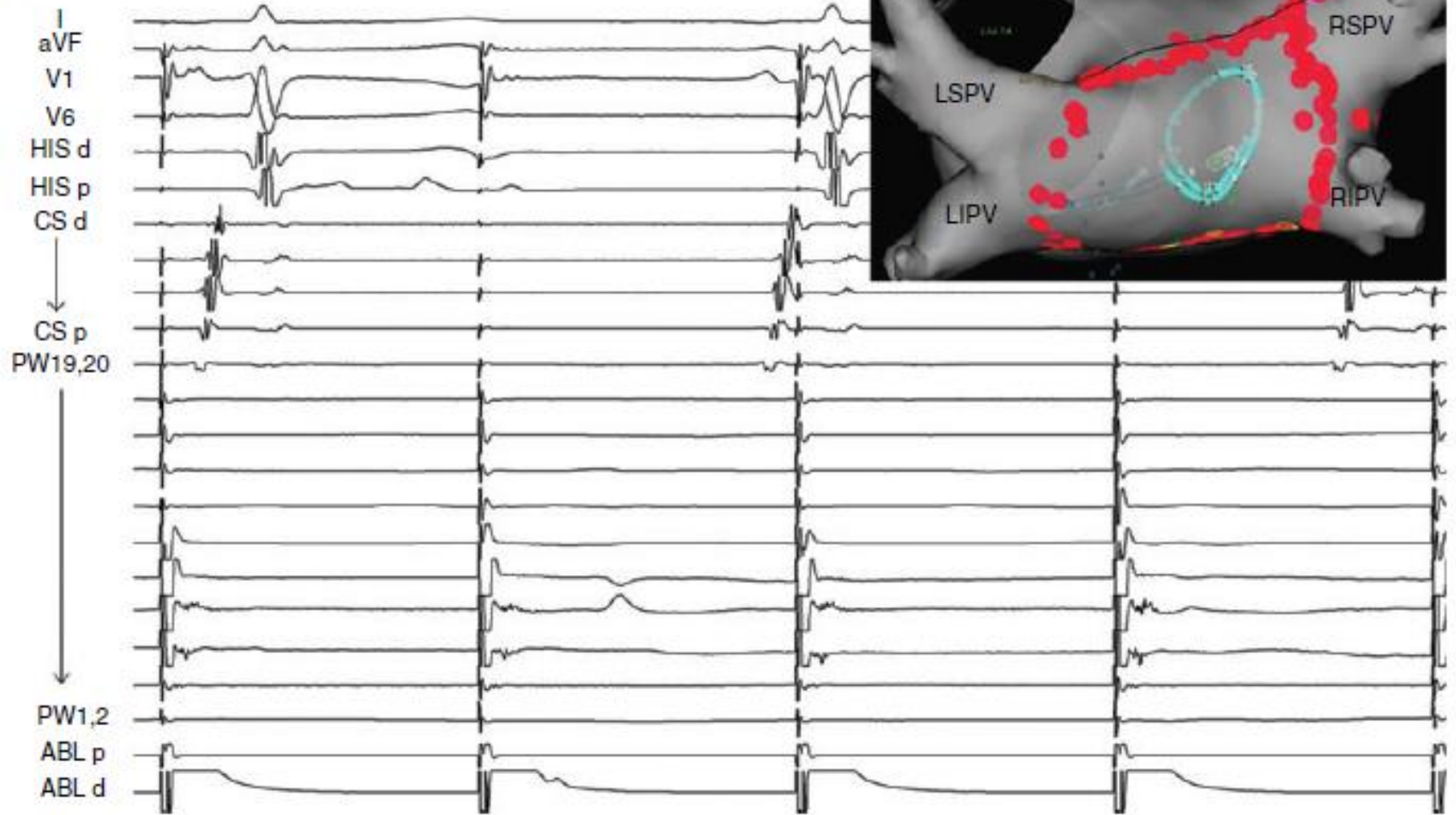
See [Contacts and Locations](#)

Sponsor:

Arash Aryana, MD

Condition or disease ⓘ	Intervention/treatment ⓘ
Atrial Fibrillation Chronic	Procedure: Cryo or RF Ablation only of Pulmonary Veins
Persistent Atrial Fibrillation	Procedure: Cryo or RF Ablation of Pulmonary Veins plus Ablation of the PLAW

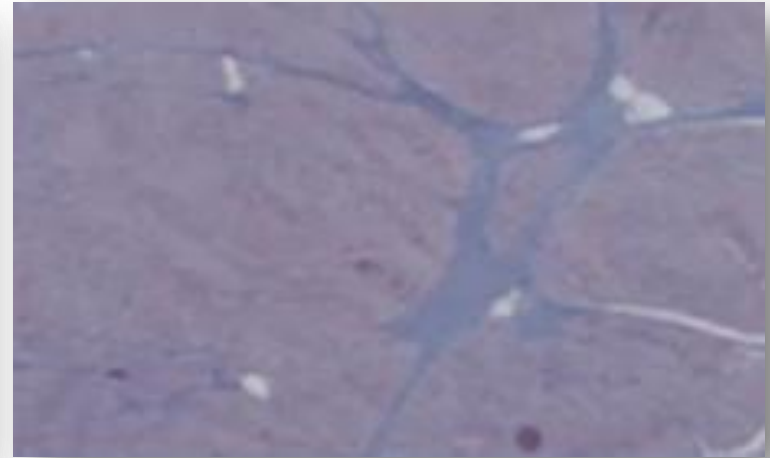
C



Blok hedefi yok lokal capture eliminasyonu
RF ve floro zamanını uzatabilir

Düşük voltaj alanları

Atrial fibrozis ya da fibrotik atrial KMP AF gelişimi için bir risk faktörü

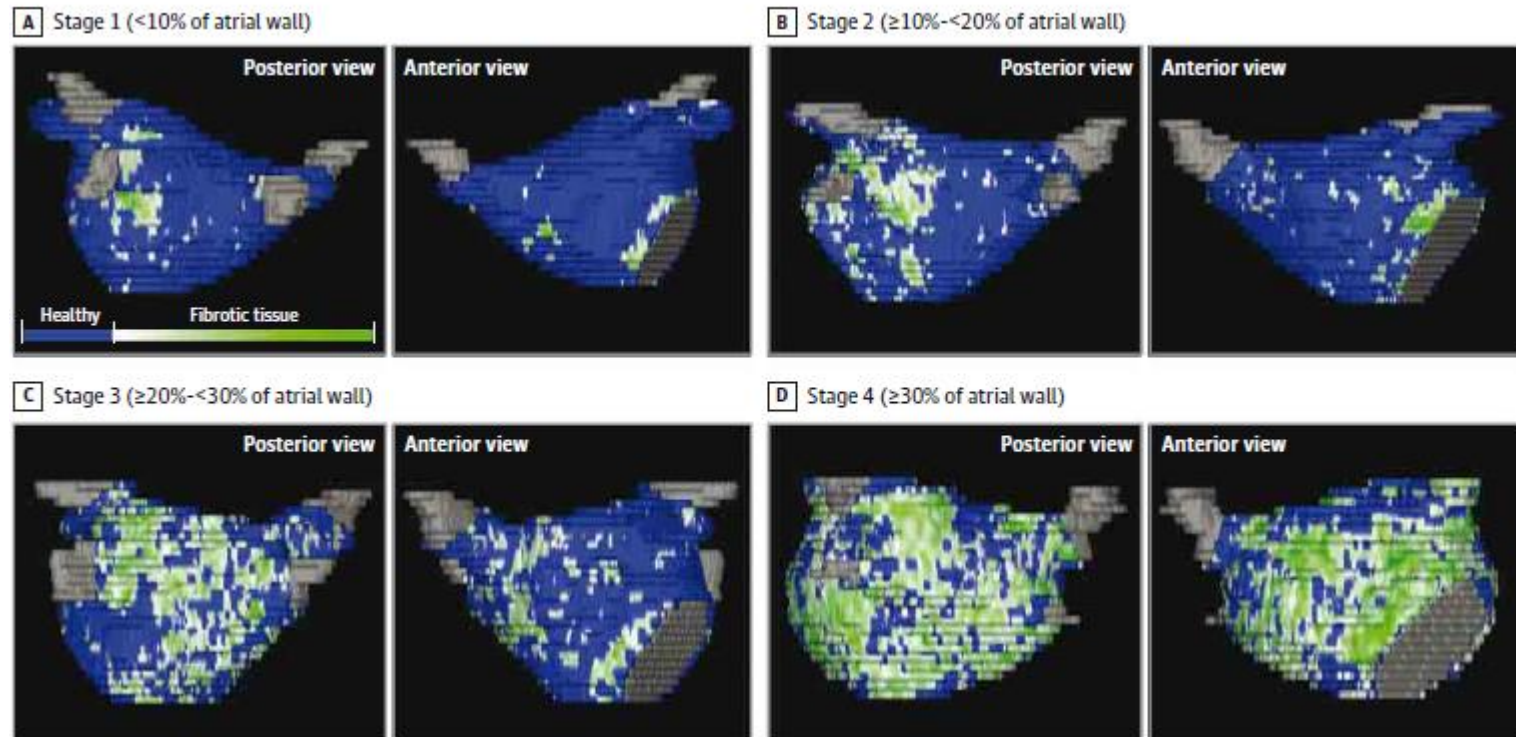


Original Investigation

Association of Atrial Tissue Fibrosis Identified by Delayed Enhancement MRI and Atrial Fibrillation Catheter Ablation The DECAAF Study

Nassir F. Marrouche, MD; David Wilber, MD; Gerhard Hindricks, MD; Pierre Jais, MD; Nazem Akoum, MD; Francis Marchlinski, MD; Eugene Kholmovski, PhD; Nathan Burgon, BSc; Nan Hu, PhD; Lluís Mont, MD; Thomas Deneke, MD; Mattias Duytschaever, MD; Thomas Neumann, MD; Moussa Mansour, MD; Christian Mahnkopf, MD; Bengt Herweg, MD; Emile Daoud, MD; Erik Wissner, MD; Paul Bansmann, MD; Johannes Brachmann, MD

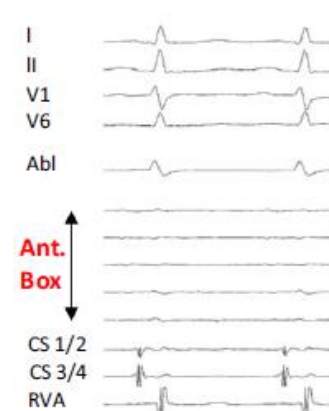
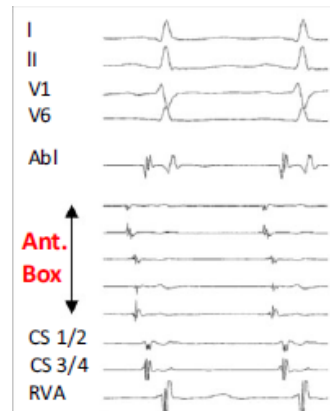
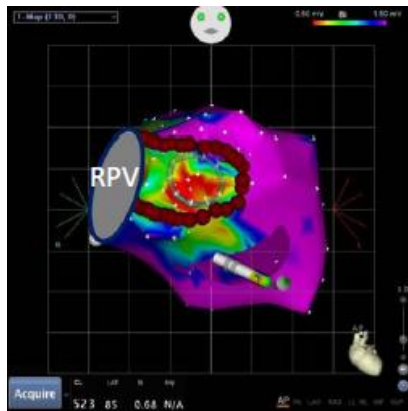
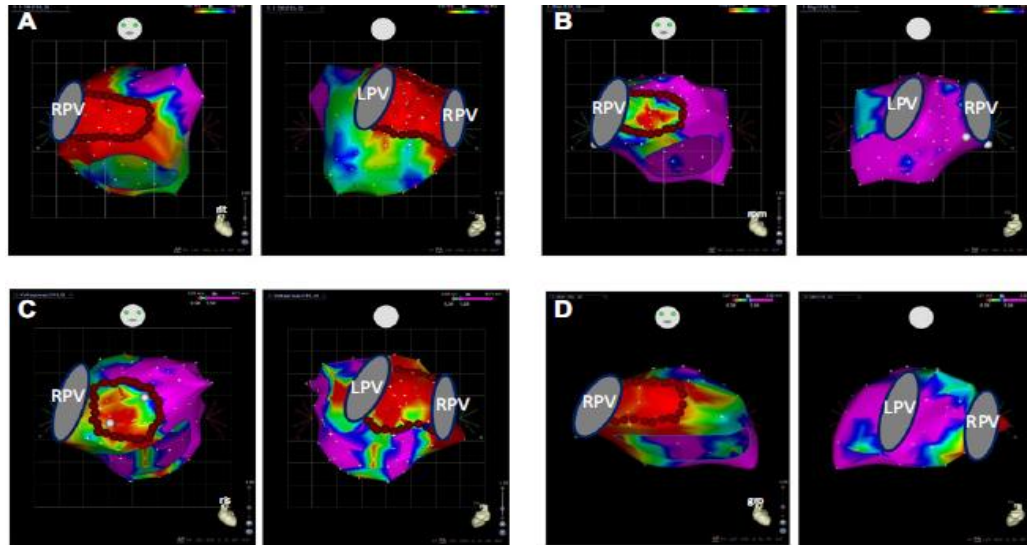
Figure 2. Four Stages of Left Atrial Tissue Fibrosis Based on 3D Delayed Enhancement Magnetic Resonance Imaging Scans



CONCLUSIONS AND RELEVANCE Among patients with AF undergoing catheter ablation, atrial tissue fibrosis estimated by delayed enhancement MRI was independently associated with likelihood of recurrent arrhythmia. The clinical implications of this association warrant further investigation.

Box Isolation of Fibrotic Areas (BIFA): A Patient-Tailored Substrate Modification Approach for Ablation of Atrial Fibrillation

HANS KOTTKAMP, M.D., JAN BERG, M.D., RODERICH BENDER, M.D.,
ANDREAS RIEGER, M.D., and DOREEN SCHREIBER, M.D.



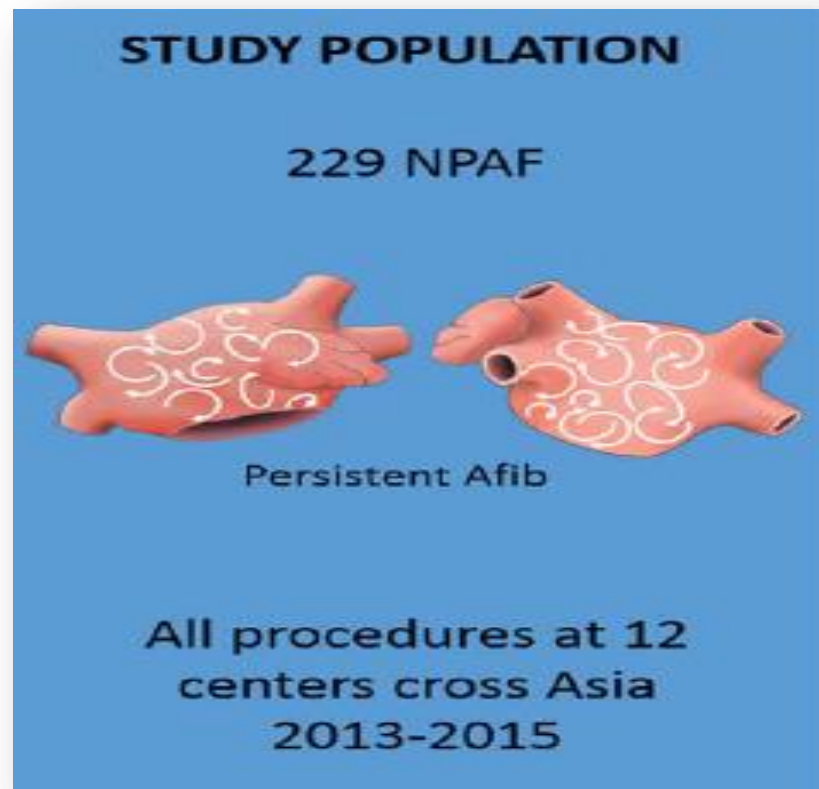
Left Atrial Substrate Modification Targeting Low-Voltage Areas for Catheter Ablation of Atrial Fibrillation: A Systematic Review and Meta-Analysis

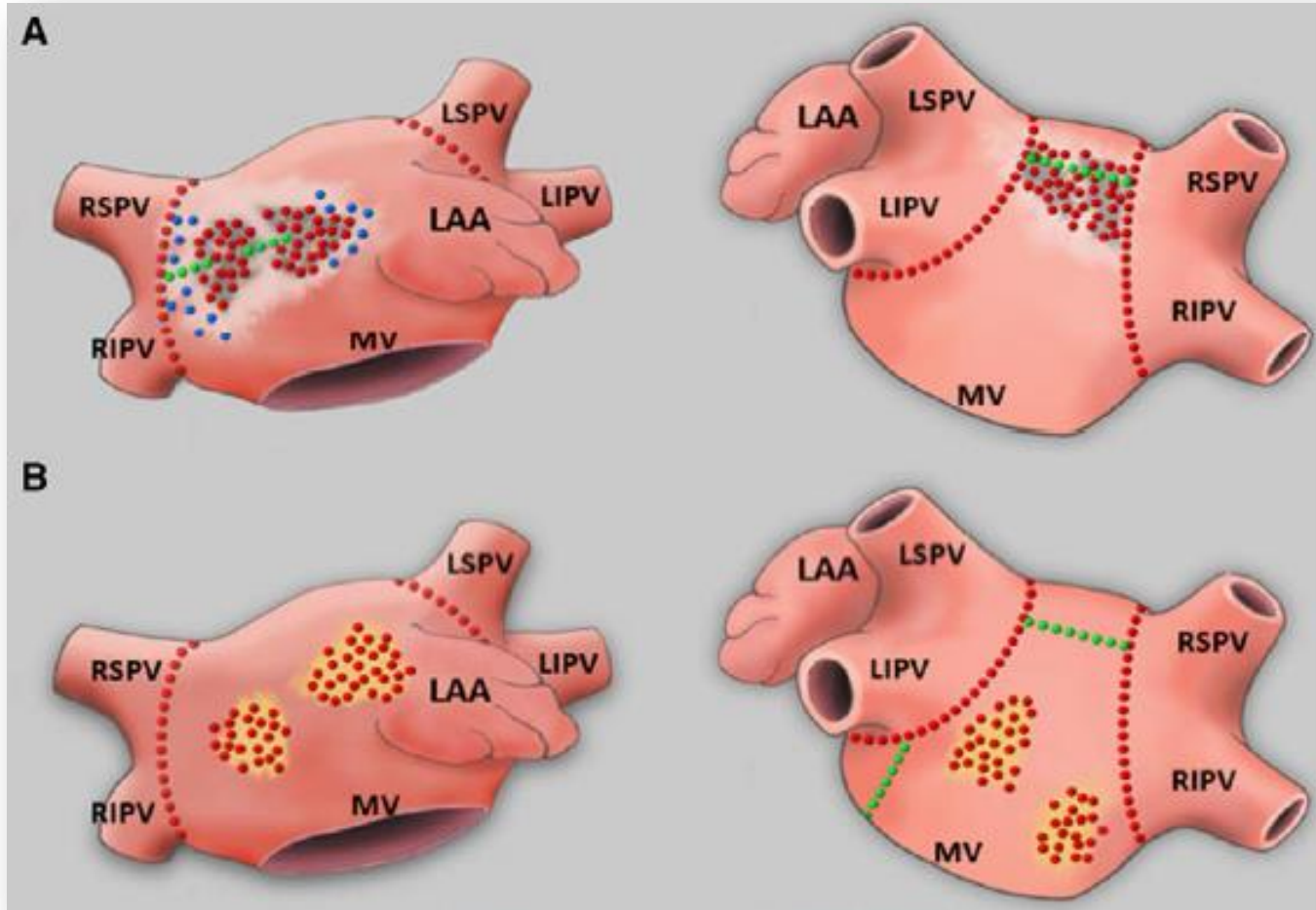
Table I.
Baseline Characteristics of Included Studies

Study	Rolf et al.		Wang et al.		Jadidi et al.		Cutler et al.		Yamaguchi et al.		Yang et al.	
Year	2014		2014		2016		2016		2016		2016	
Study Type	Retrospective		Randomized		Prospective		Retrospective		Retrospective (consecutive patients)		Retrospective (consecutive patients)	
No. Patients	204		124		151		141		101		164	
Study Groups	S 178	C 26	S 64	C 60	S 85	C 66	S 65	C 76	S 39	C 62	S 86	C 78
Age, y	61 ± 10	67 ± 9	63 ± 11	62 ± 6	63 ± 8	59 ± 10	62 ± 13	61 ± 10	66 ± 7	58 ± 10	53 ± 10	55 ± 10
Male, %	68	58	64	58	65	74	71	62	62	77	77	77
PAF, %	35	35	0	0	0	0	0	0	0	0	0	0
Pers AF, %	65	65	0	0	100	100	100	100	54	76	42	48
L-s pers AF, %	0	0	100	100	0	0	0	0	46	24	58	52
HTN, %	74	89	41	40	61	58	69	61	69	47	52	58
T2DM, %	16	15	NA	NA	NA	NA	23	20	15	6	NA	NA
SHD, %	23	46	NA	NA	16	9	NA	NA	28	6	9	6
CHD, %	NA	NA	6	8	6	2	26	30	NA	NA	NA	NA
LAD, mm	44 ± 7	43 ± 6	45 ± 5	45 ± 3	44 ± 5	46 ± 5	45 ± 1	43 ± 1	44 ± 6	41 ± 5	41 ± 6	43 ± 4
LVEF, %	60	57	65	64	53	55	48	51	62	64	62	63
History of AF, mos	49	60	41	33	NA	NA	27	30	NA	NA	15	12

STABLE-SR (Electrophysiological Substrate Ablation in the Left Atrium During Sinus Rhythm) for the Treatment of Nonparoxysmal Atrial Fibrillation

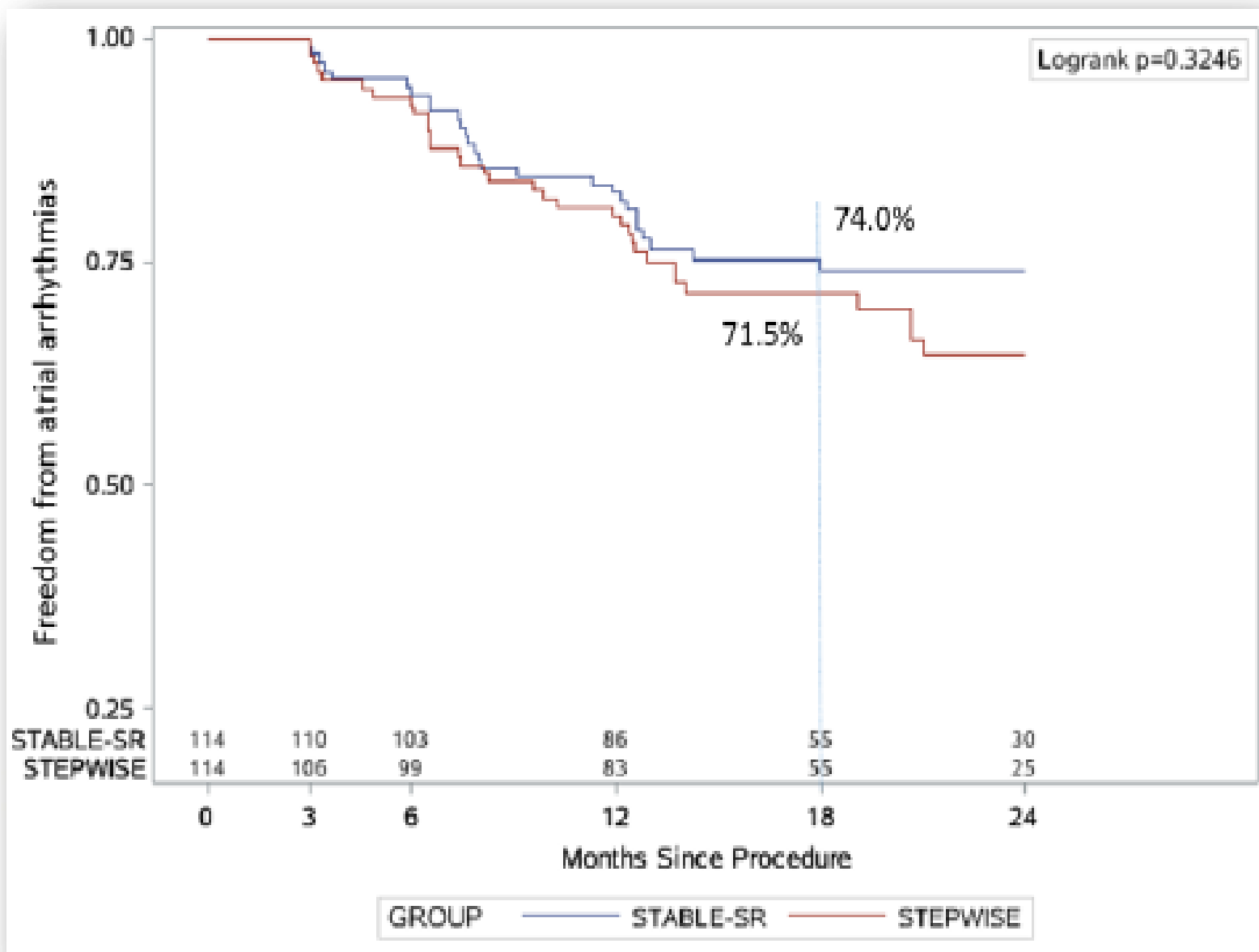
A Prospective, Multicenter Randomized Clinical Trial





Sinus ritminde fibrozis temelli
Subs. Modifikasyonu (114 hasta)

AF sırasında elektrogram temelli
Subs. Modifikasyonu (115 hasta)



Hangi Metod ile ablasyon?

Sirkümferensiyel

Lineer

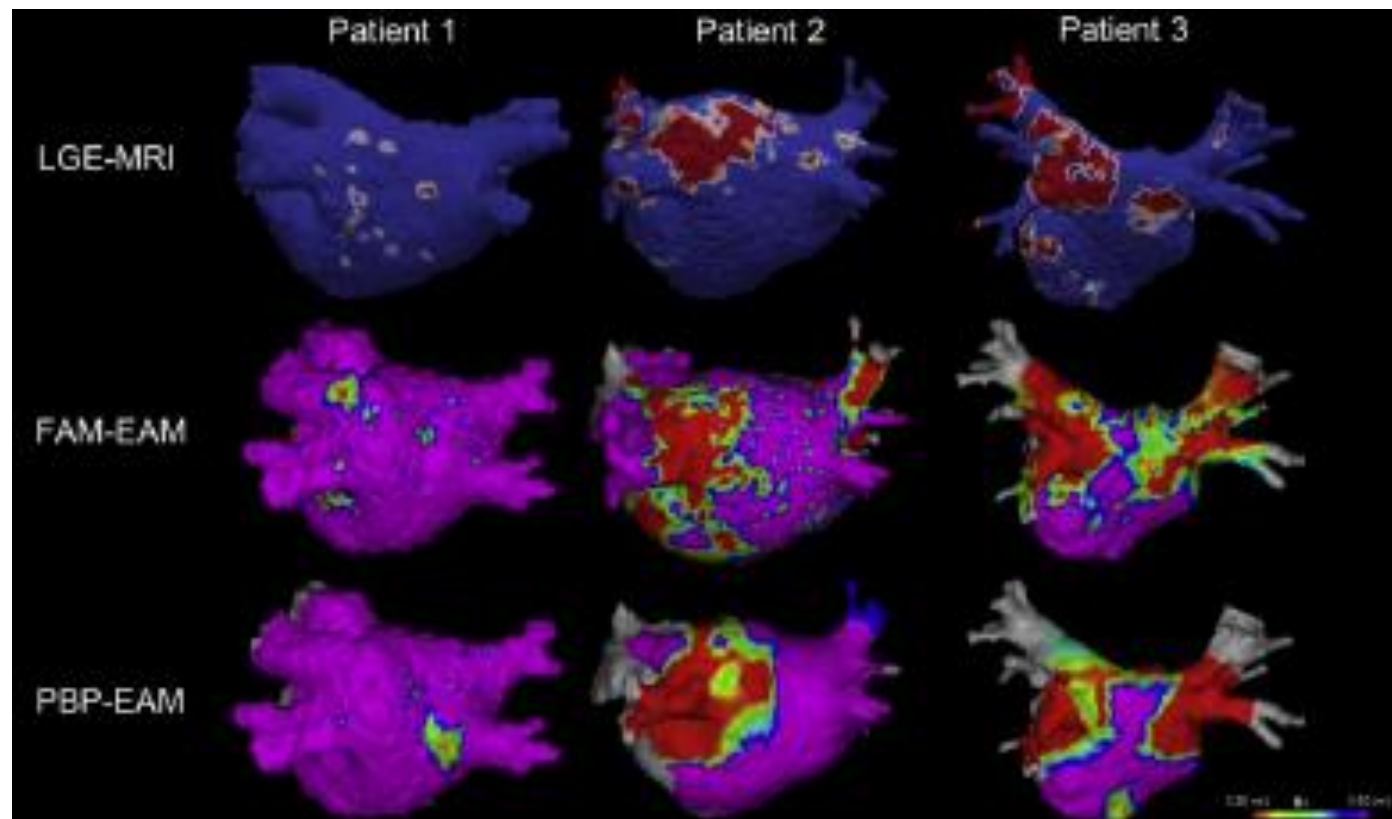
Homojenizasyon

Anatomik bariyerler ile birleştirme

Fibrotik alanların tespitiinde Voltaj aralıđı?
Önemli skar alanı ve sıklıđı?
Altın standard MRI ile dođrulama?
Geniř Çaplı randomize çalıřmalar

Multimodal Examination of Atrial Fibrillation Substrate

Correlation of Left Atrial Bipolar Voltage Using Multi-Electrode Fast Automated Mapping, Point-by-Point Mapping, and Magnetic Resonance Image Intensity Ratio



Efficacy of Delayed Enhancement MRI-Guided Ablation vs Conventional Catheter Ablation of Atrial Fibrillation (DECAAFII)



The safety and scientific validity of this study is the responsibility of the study sponsor and investigators. Listing a study does not mean it has been evaluated by the U.S. Federal Government. [Know the risks and potential benefits](#) of clinical studies and talk to your health care provider before participating. Read our [disclaimer](#) for details.

ClinicalTrials.gov Identifier: NCT02529319

[Recruitment Status](#) ⓘ : Recruiting

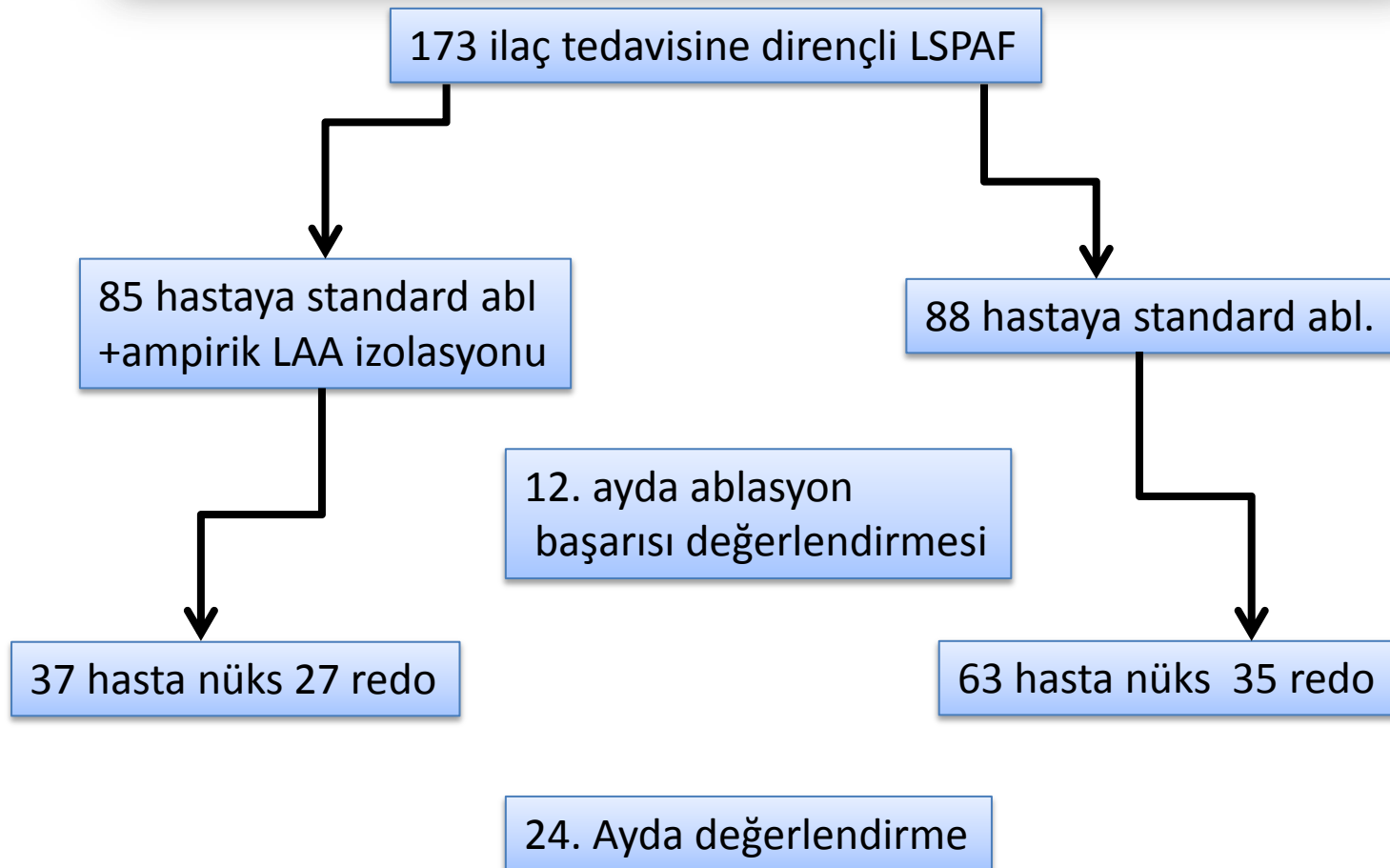
[First Posted](#) ⓘ : August 20, 2015

[Last Update Posted](#) ⓘ : December 22, 2016

See [Contacts and Locations](#)

Left Atrial Appendage Isolation in Patients With Longstanding Persistent AF Undergoing Catheter Ablation

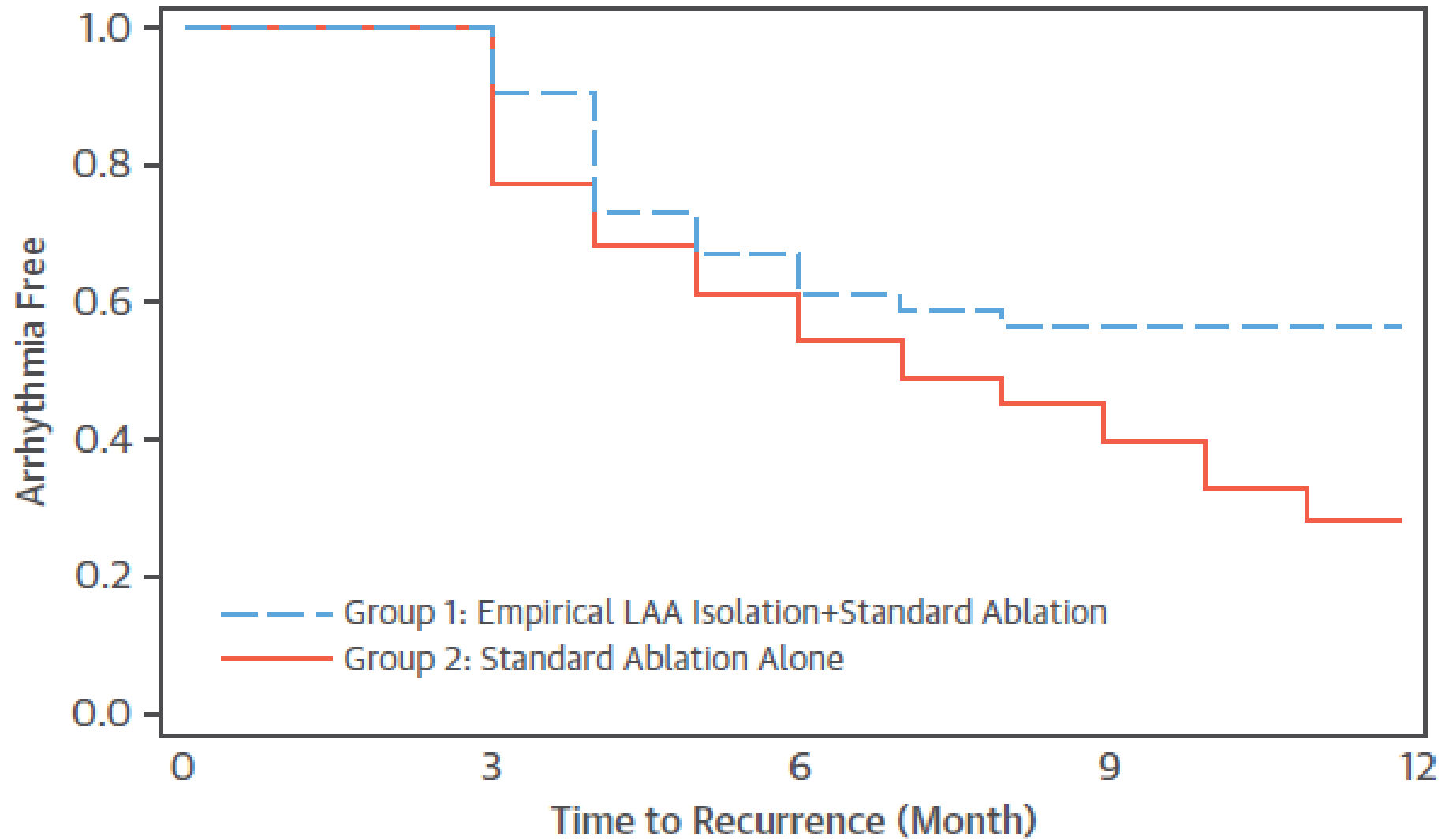
BELIEF Trial



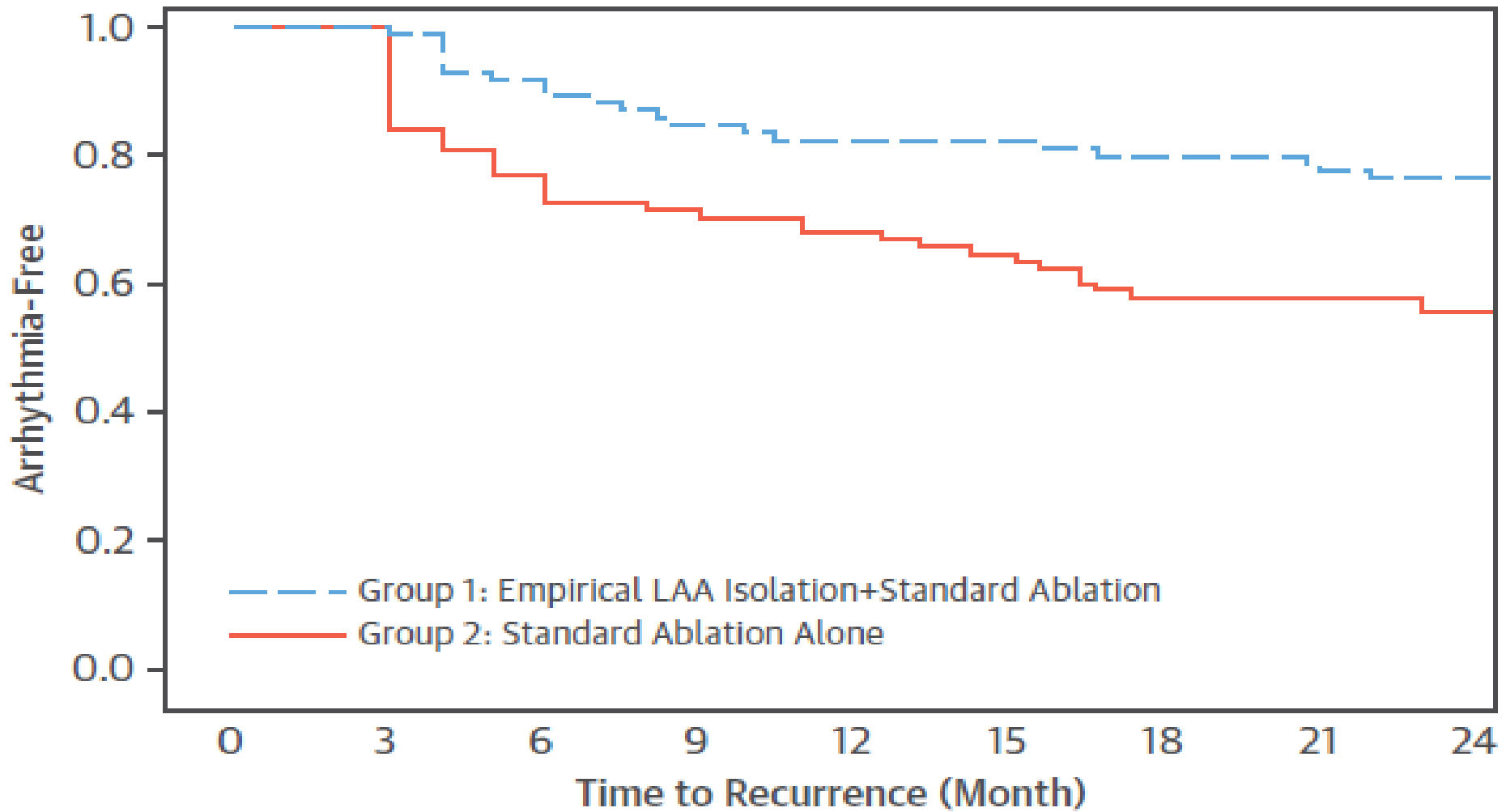
PV antrum izolasyonu

	Group 1 (n = 85)	Group 2 (n = 88)	p Value
Coronary sinus	71 (83.5)	75 (85.2)	0.76
Superior vena cava*	25 (29.4)*	25 (28.4)*	0.89
Left atrial appendage	NA	32 (36.4)†	<0.001
Right atrium/septum	26 (30.6)	24 (27.3)	0.63
Left atrial septum	43 (50.6)	42 (47.7)	0.71
Mitral valve annulus	3 (3.5)	4 (4.5)	1.00
Right atrial crista	3 (3.5)	4 (4.5)	1.00

Ampirik SVC izolasyonu



Tek işlem bir yıllık başarı: Grup 1 de %56 Grup 2 de % 28.

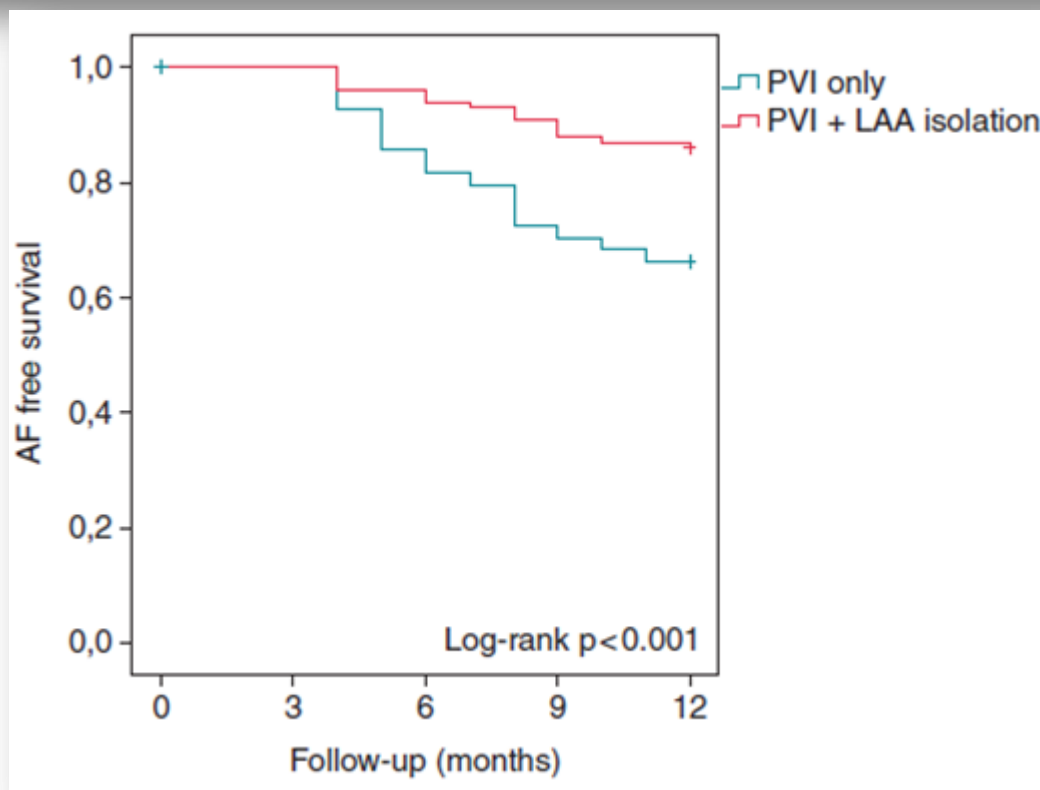


Multiple işlem iki yıllık başarı: Grup 1 de %73 Grup 2 de %56.

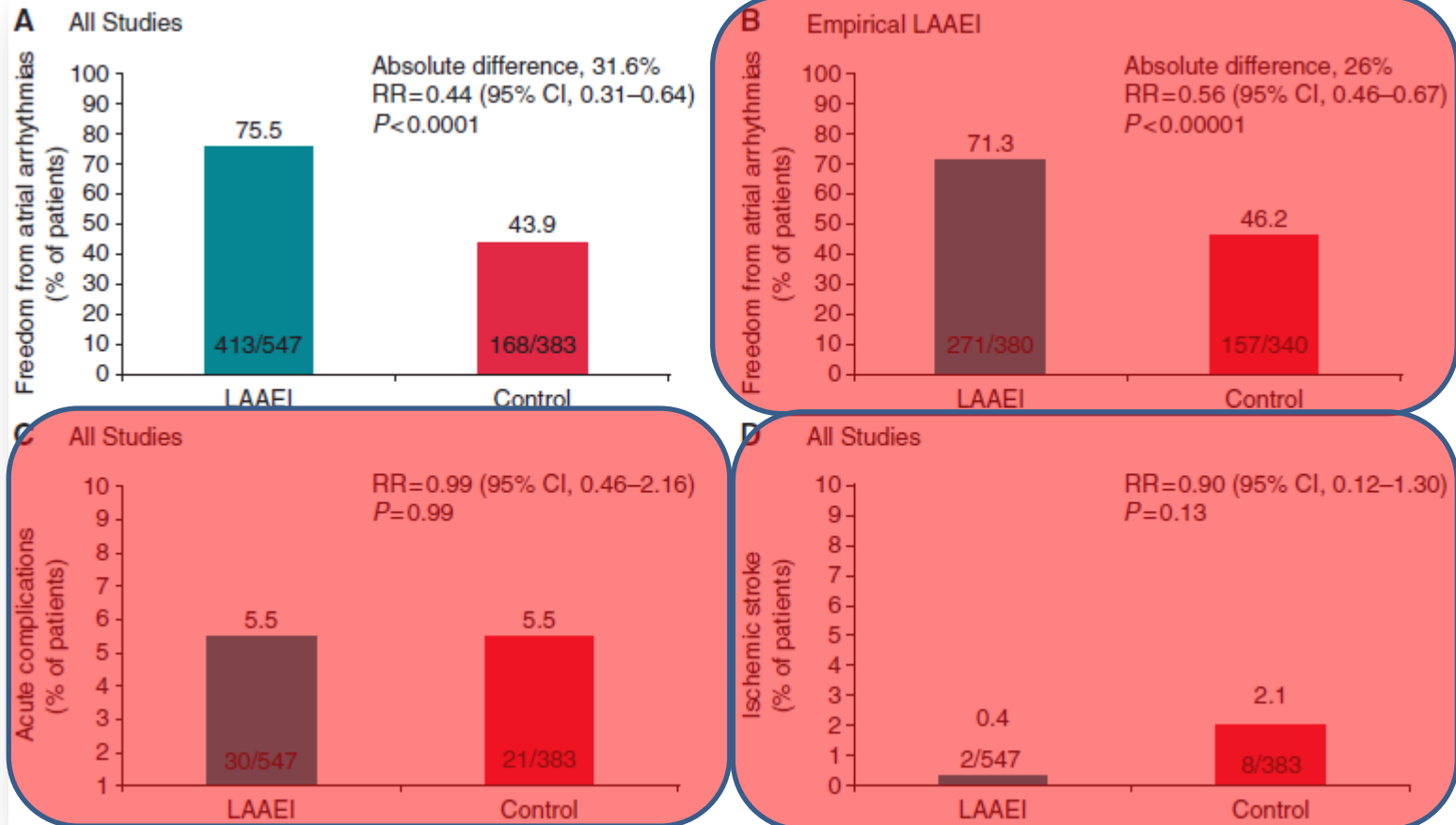
LAA izolasyonu yapılan grupta rekonneksiyon %37

Left atrial appendage isolation in addition to pulmonary vein isolation in persistent atrial fibrillation: one-year clinical outcome after cryoballoon-based ablation

Hikmet Yorgun, Uğur Canpolat*, Duygu Kocyigit, Cem Çöteli, Banu Evranos, and Kudret Aytemir



Benefit of left atrial appendage electrical isolation for persistent and long-standing persistent atrial fibrillation: a systematic review and meta-analysis



Unexpectedly High Incidence of Stroke and Left Atrial Appendage Thrombus Formation After Electrical Isolation of the Left Atrial Appendage for the Treatment of Atrial Tachyarrhythmias

	Overall Group (n=100)	Patients With LAAI (n=50)	Patients Without LAAI (n=50)	P Value
Female, n, %	53 (53)	28 (56)	25 (50)	0.55
Age, y	70.0 (65.0–73.5)	71.0 (66.0–74.0)	69.0 (64.0–73.0)	0.24
Hypertension, n (%)	67 (67%)	31 (62%)	36 (72%)	0.29
Diabetes mellitus, n (%)	11 (11%)	4 (8%)	7 (14%)	0.34
CAD, n (%)	16 (16%)	9 (18%)	7 (14%)	0.59
Stroke or TIA before index procedure, n (%)	11 (11%)	7 (14%)	4 (8%)	0.34
CHA ₂ DS ₂ -VASc score*	2.0 (2.0–3.0)	3.0 (2.0–3.0)	2.0 (2.0–3.0)	0.71
LA diameter, mm*	46.0 (43.0–49.0)	46.0 (43.0–49.0)	45.5 (43.0–50.0)	0.68
LV function, %*	65.0 (65.0–65.0)	65.0 (65.0–65.0)	65.0 (65.0–65.0)	0.13
PFO, n (%)	5 (5%)	3 (6%)	2 (4%)	0.66
NOAC, n (%)	48 (48%)	21 (42%)	27 (54%)	0.23
Phenprocoumon, n (%)	47 (47%)	24 (48%)	23 (46%)	0.84
ASA therapy, n (%)	3 (3%)	3 (6%)	0 (0)	0.08
Clopidogrel therapy, n (%)	2 (2%)	2 (4%)	0 (0)	0.15
LAA thrombus or embolic event (combined), n (%)	13 (13%)	13 (26%)	0 (0)	<0.01
Smoke in LAA before ablation, n (%)	17 (17%)	9 (18%)	8 (16%)	0.75
Degree of smoke in LAA before ablation (median)	1.0 (1.0–2.0)	2.0 (1.0–2.0)	1.0 (1.0–2.0)	0.66
Smoke in LAA after ablation, n (%)	28 (29%)	19 (41%)	9 (18%)	0.012
Degree of smoke in LAA after ablation (median)	2.0 (1.0–3.0)	3.0 (1.0–3.0)	1.0 (1.0–2.0)	0.041
LAA flow velocity after ablation, m/s	0.4 (0.2–0.5)	0.2 (0.15–0.40)	0.5 (0.44–0.64)	<0.01
Number of ablation procedures before index procedure with LAAI (median)	1 (0–2)	2 (1–3)	0 (0–1)	<0.01

KARMAŞANIN
NEDENİ NE?



AF'DE NEDEN BÜTÜNCÜL OLARAK
ANLAŞILAMAMIŞTIR

TEDAVİ STRATEJİLERİ
KÖRLEMESİNE DİR

\$1 MILLION QUESTION

PERSİSTAN AF ABLASYONUNDA DOĞRU STRATEJİ NEDİR?

A: SADECE PVI

B: PVI+PW İZOLASYONU

C: PVI+LVA İZOLASYONU

D: PVI+LAA İZOLASYONU



Persistan AF



İLK İŞLEM

SADECE PVI

PVI+PW İZO.

2. İŞLEM

Rekonneksiyon kontrol
PW İZO.
LVA eliminasyonu
İsop.?

Rekonneksiyon kontrol
LAA izolasyonu
LVA eliminasyonu
İsop.?

3. İŞLEM

Yeter artık
ilaç?

Rekonneksiyon kontrol
CAFE, LINE
GP abl
İsop.?

LSPAF



İLK İŞLEM

PVI+PW

PVI+PW +LAA İZO.

2. İŞLEM

Rekonneksiyon kontrol
LAA İZO.
LVA eliminasyonu
İsop.?

Rekonneksiyon kontrol
ANT SEPTUM, ROOF, MI
AMP. SVC
LVA eliminasyonu
İsop.?

3. İŞLEM

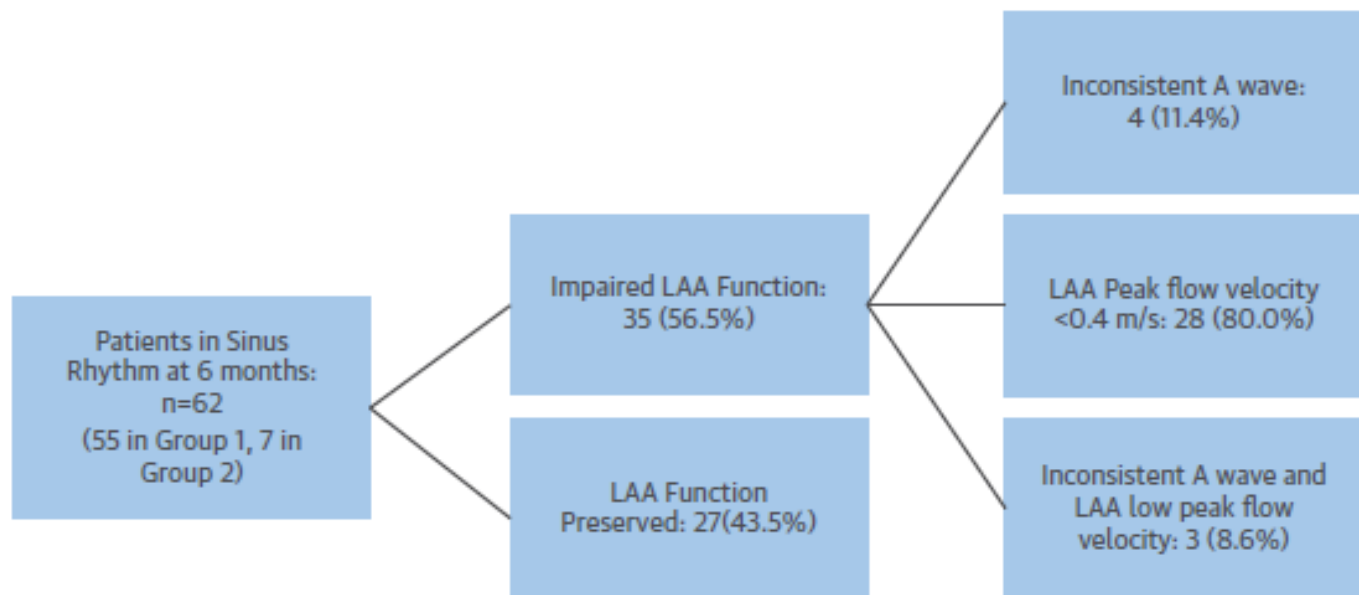
Yeter artık
ilaç?

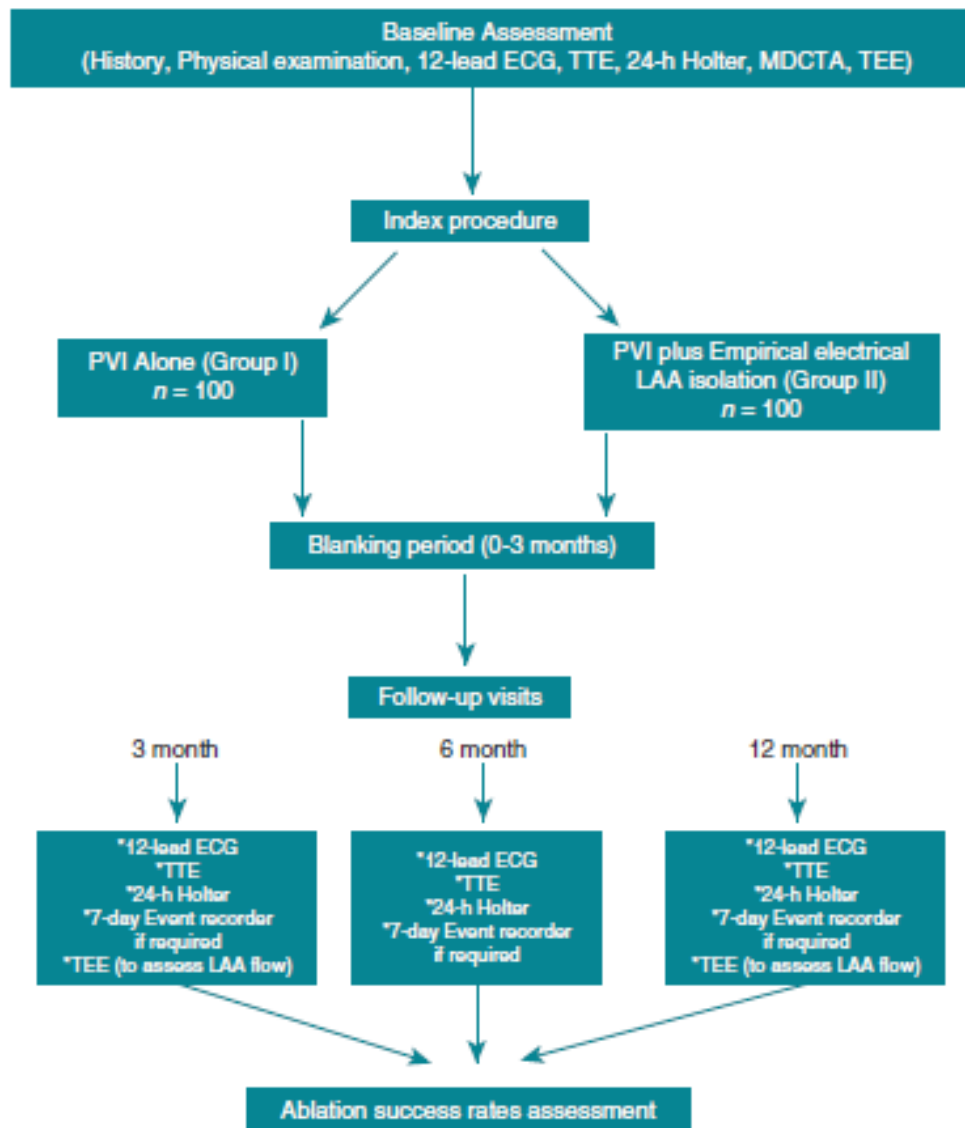
Rekonneksiyon kontrol
CAFE YA DA STEPWISE
GP abl
İsop.?

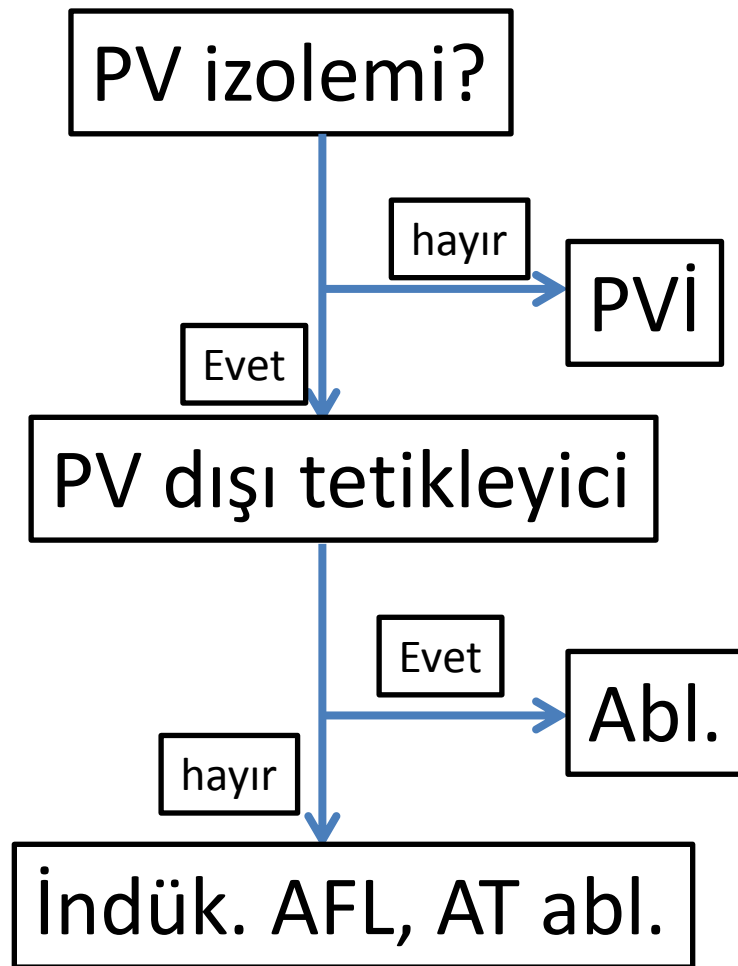
No stroke or transient ischemic attack was reported with empirical electrical left atrial appendage isolation (group 1), whereas 4 (4.5%) patients had stroke after standard ablation (group 2) ($p = 0.12$). No deaths occurred during the study period.

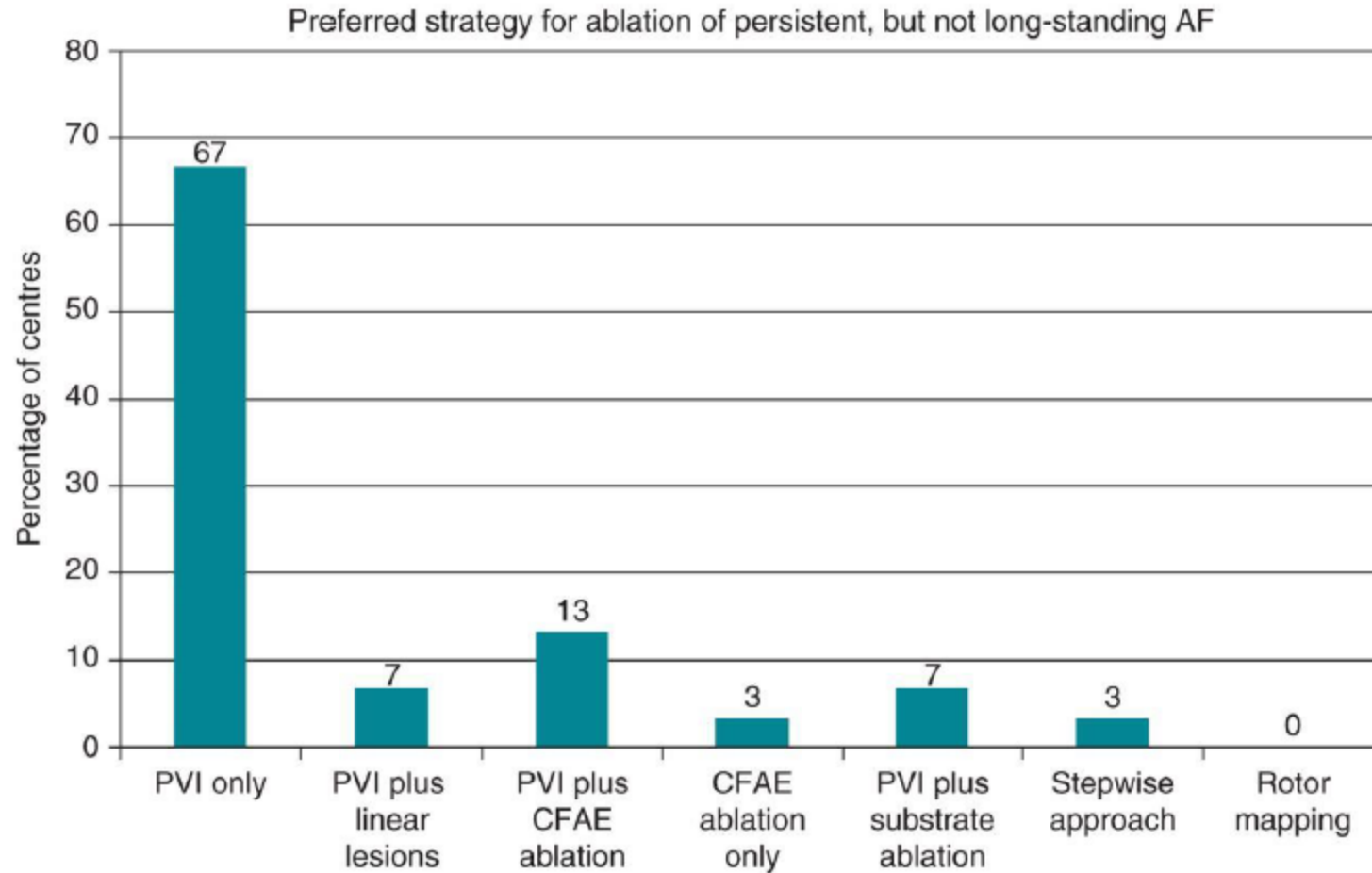
During this procedure, PV reconnection was detected in 3 (11.1%) patients in group 1 and in 4 (11.4%) in group 2 ($p = 1.0$). LAA reconnection was detected in 10 of 27 (37%) group 1 patients

FIGURE 5 LAA Function Assessed by TEE at Follow-Up



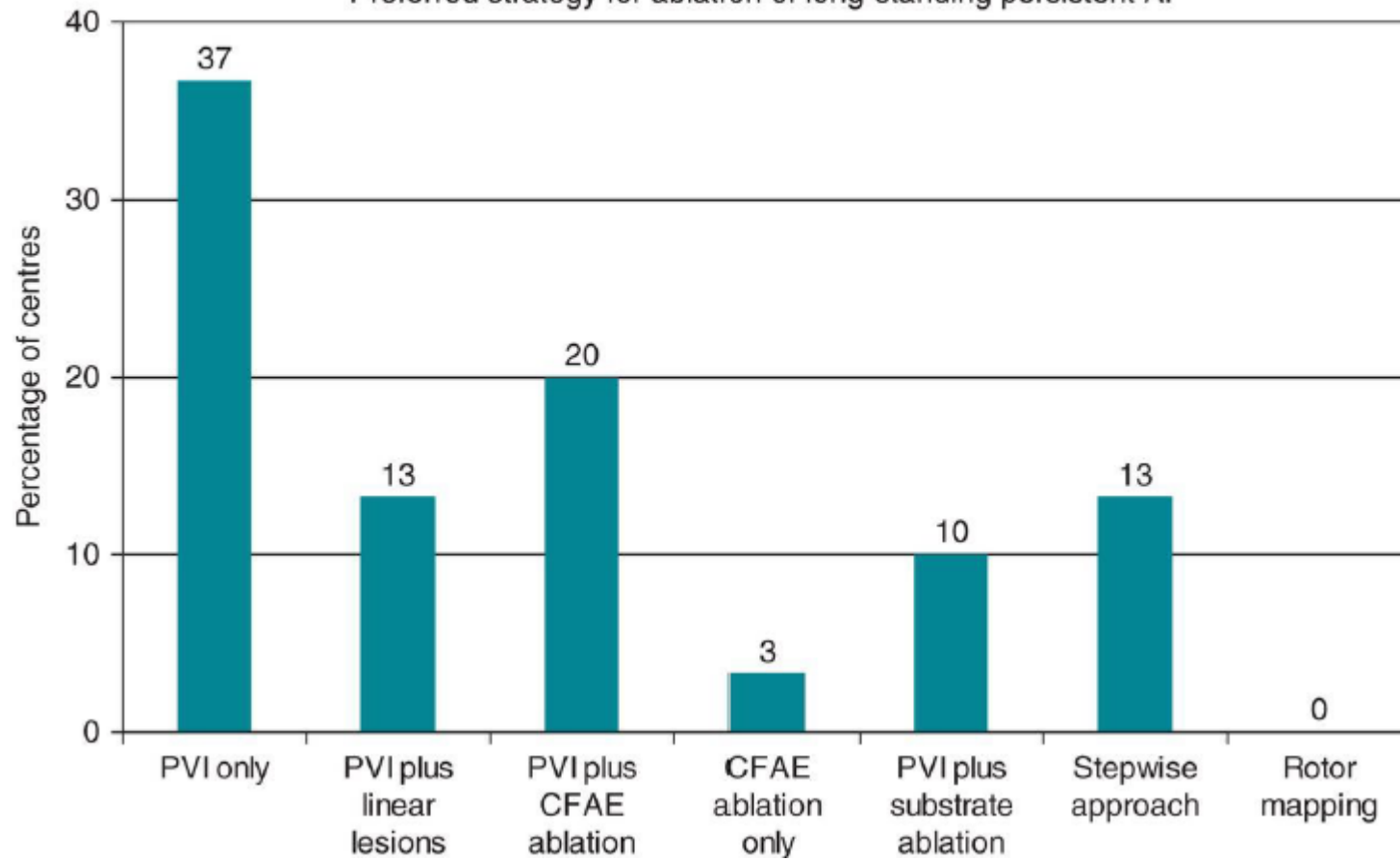


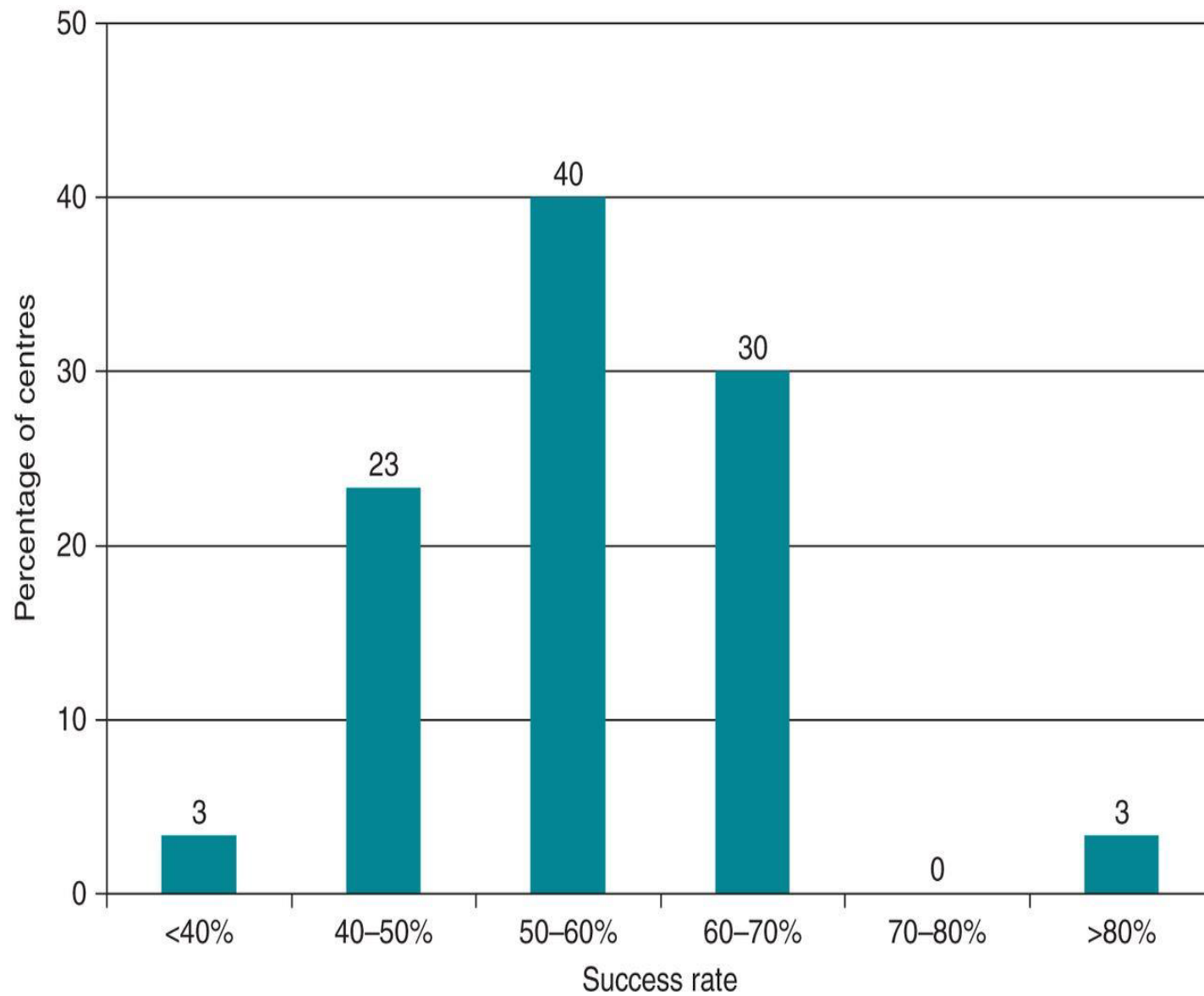


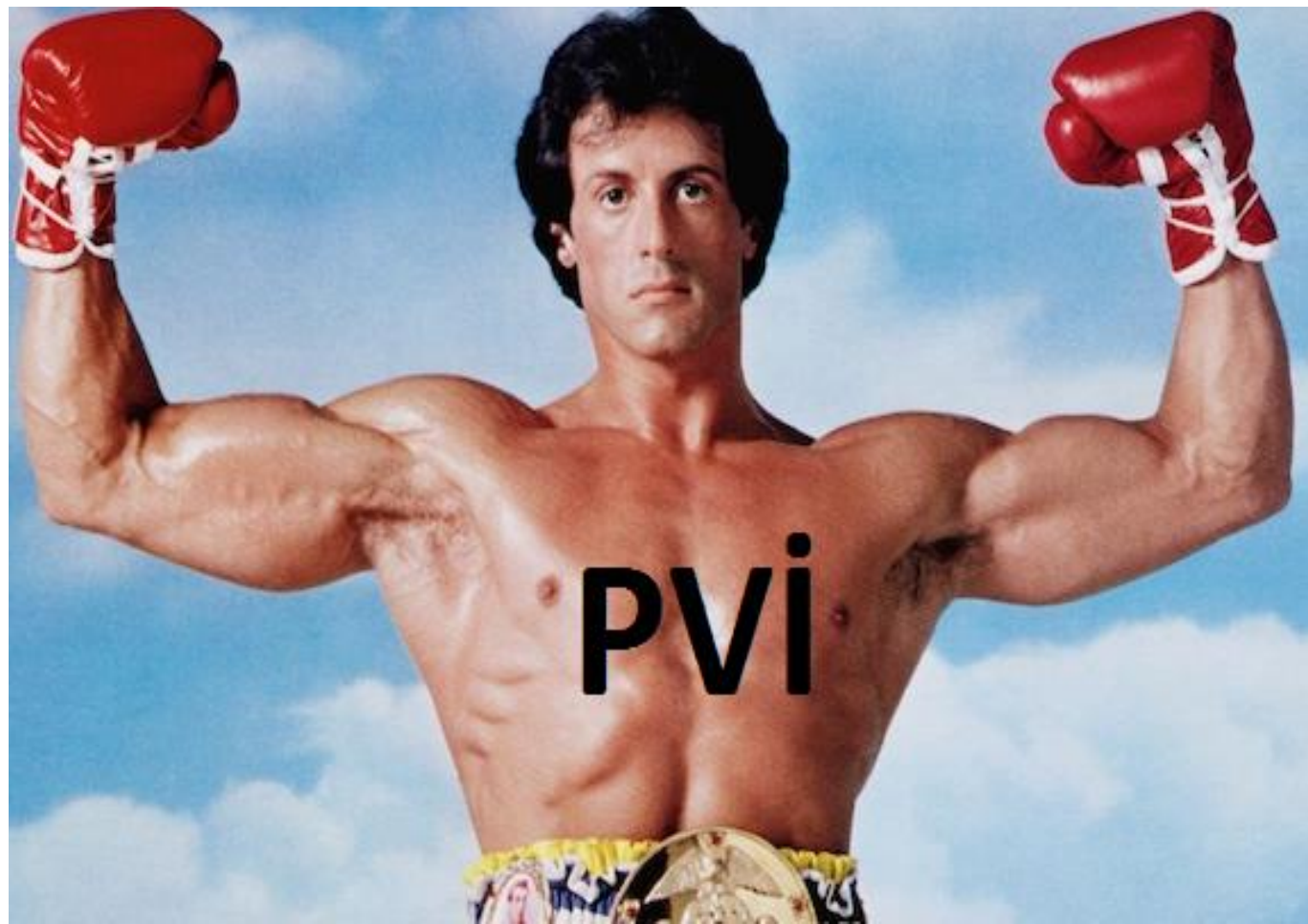


Nikolaos Dagres et al. Europace 2015;17:1596-1600

Preferred strategy for ablation of long-standing persistent AF







PVi

PV dışı tetikleyiciler

Non-PV Triggers

Non-PV Triggers

Non-PV Triggers

Çok merkezli geniş çaplı çalışma
Tetikleyiciler nasıl ortaya çıkarılacak
1-İsoproterenol, adenosin ya da her ikisi

Tetikleyici olmayan erken atımlar nasıl dışlanacak

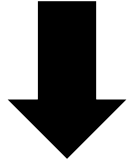
?

AA

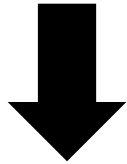
tent

O zaman Persistent AF
ablasyonunda ne yapalım?

İlk işlem PVi-takip



Nüks Halinde PV kontrolü
Lineer lezyonlar-Roof,MI,Posterior LA



PV dışı tetikleyiciler



Özellikle obezite mevcudiyetinde yaşam stili modifikasyonu

YENİLENMİŞ
SES VE GÖRÜNTÜ

BATI CEPHESİNDE YENİ BİR ŞEY YOK

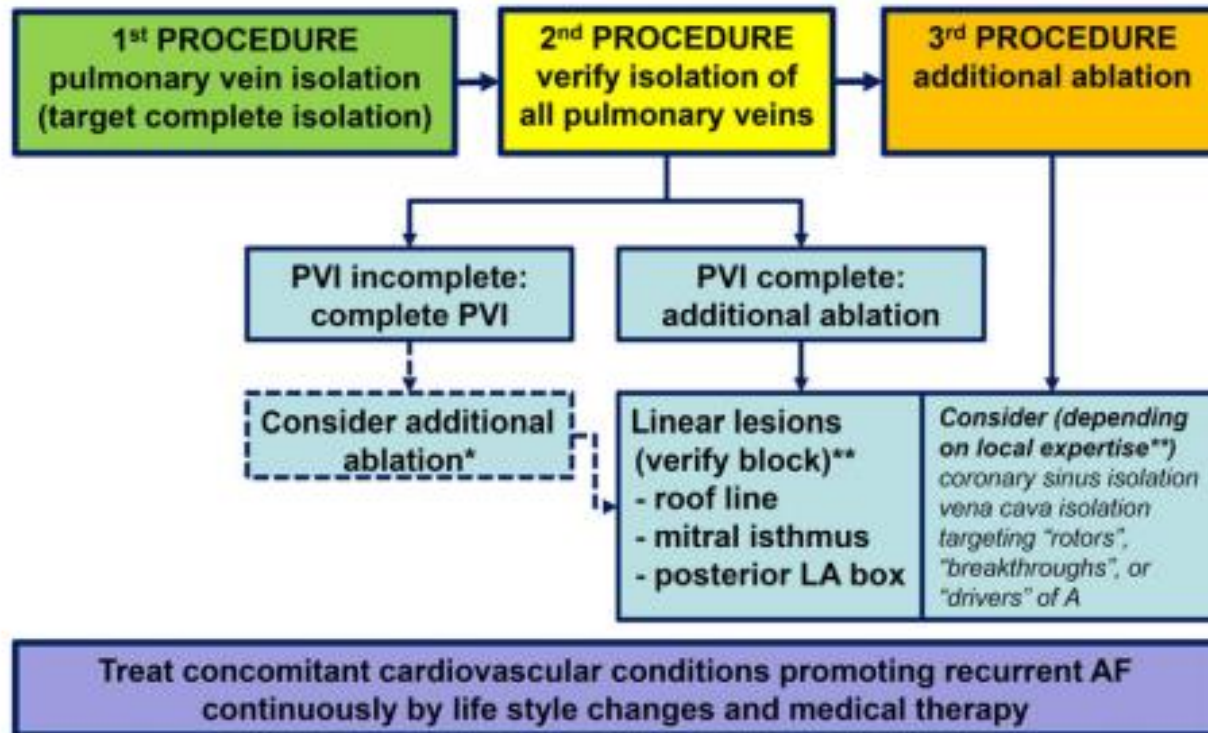
ALL QUIET ON THE WESTERN FRONT



1930
EN İYİ FİLM VE
EN İYİ YÖNETMEN
OSCAR ÖDÜLÜ



Sequence of ablation targets for persistent AF



*additional linear lesions should be performed in patients with macroreentrant atrial tachycardia / flutter

** there is little data to inform the choice of linear lesions and other additional ablation targets. Local expertise to achieve the desired ablation target (e.g. crossing short lines) should determine the choice.

*** right atrial isthmus ablation should be considered if isthmus-dependent atrial flutter is documented

Figure 4 Proposed stepwise approach to catheter ablation of patients with persistent atrial fibrillation emphasizing the need to isolate the pulmonary veins before applying further ablation techniques, and illustrating the integration of medical and life style interventions underpinning the effect of catheter ablation. This proposal integrates available evidence. We recognize the need to evaluate the best AF ablation strategy in different populations of patients with persistent atrial fibrillation.

PVI başarısını artırmak için

- Lasso ya da achive kateteri ile haritalama
- 30-60 dk sonra kontrol
- İsoproterenol ya da adenozin
- Çıkış bloğunun gösterilmesi

Electrophysiology

A New Approach for Catheter Ablation of Atrial Fibrillation: Mapping of the Electrophysiologic Substrate

Koonlawee Nademanee, MD, FACC,* John McKenzie, MD,* Erol Kosar, MD,* Mark Schwab, MD,* Buncha Sunsaneewitayakul, MD,† Thaveekiat Vasavakul, MD,* Chotikorn Khunnawat, MD,* Tachapong Ngarmukos, MD‡

Inglewood, California; and Bangkok, Thailand

- OBJECTIVES** We sought to test the hypothesis that complex fractionated electrograms (CFAEs) recorded during atrial fibrillation (AF) could be used as target sites for catheter ablation of AF.
- BACKGROUND** Mapping of AF in humans has shown that areas of CFAEs correlate with areas of slowed conduction and pivot points of reentrant wavelets. We hypothesized that such areas of CFAEs could be identified in patients with AF and might serve as target sites for catheter ablation to maintain sinus rhythm.
- METHODS** The study population included 121 patients (29 females; mean age, 63 years) with refractory AF (57 paroxysmal, 64 chronic). All patients underwent nonfluoroscopic electroanatomic mapping (CARTO) during AF. Using CARTO, the biatrial replica, displayed in a three-dimensional color-coded voltage map, was created during AF, and areas associated with CFAEs were identified. Radiofrequency ablation of the area with CFAEs was performed, aiming to eliminate CFAE and/or convert to sinus rhythm.
- RESULTS** Complex fractionated atrial electrograms were found in seven of nine regions of both atria, but were mainly confined to the interatrial septum, pulmonary veins, roof of left atrium, and left posteroseptal mitral annulus and coronary sinus ostium. Ablations of the areas associated with CFAEs resulted in termination of AF without external cardioversion in 115 of the 121 patients (95%); 32 (28%) required concomitant ibutilide treatment. At the one-year follow-up, 110 (91%) patients were free of arrhythmia and symptoms, 92 after one ablation and 18 after two.
- CONCLUSIONS** Areas with CFAEs represent a defined electrophysiologic substrate and are ideal target sites for ablations to eliminate AF and maintain normal sinus rhythm. (J Am Coll Cardiol 2004; 43:2044-53) © 2004 by the American College of Cardiology Foundation

STABLE SR

**high-density bipolar voltage mapping
of the left atrium (LA) was performed with
>500 points
in each patient (at least 300 surface points
were requested)
using an A-Focus (St. Jude Medical, St. Paul,
MN) catheter
with the interspace of 3.0 mm to identify the
low-voltage
zones (LVZs: 0.1–0.4 mV) and transitional
zones (0.4–1.3
mV).**