



Indicações e técnicas de ablação de FA

a terapêutica de intervenção vai substituir os fármacos?

Luís Carpinteiro

Dear Professor Einthoven,

Sept. 2, 1919

... At present we are working at Fibrillation of the Auricles, but it is a very tough nut to crack.

With kindest regards, Very sincerely, yours,

Thomas Lewis.



•Indicações

- Subgrupos de apresentação clínica, relação com terapêuticas concomitantes
- Idade, comorbilidade e outros preditores de sucesso

•Técnicas

- “targets” e estratégia: aplicação por grupos de indicação
 - Isolamento das VP envolvimento antral
 - massa crítica / “debulking”: zonas de refractoriedade curta, estruturas de microreentrada / “rotors”
 - Desinervação
 - Segmentação: linhas
- Meios físicos
 - Energias
 - Desenho de cateteres e material de acesso
 - Técnicas de acesso
 - Meios não radiológicos. auxiliares gráficos computadorizados ao mapeamento / posicionamento
 - Imagiologia: angio rotacional, fusão RMN / TAC/ICE

•Fármacos vs. Intervenção. Resultados da ablação: subgrupos clínicos, desempenho das técnicas

- Complementaridade Fármacos / ablação
 - Resultados por primeira intervenção / reintervenções
 - “Off drugs”
 - Método de follow up e definição de sucesso
 - Duração de follow up e Duração de sucesso
 - Risco embólico: quanto sucesso é necessário, qual o papel de intervenções associadas ?



First diagnosed episode of atrial fibrillation

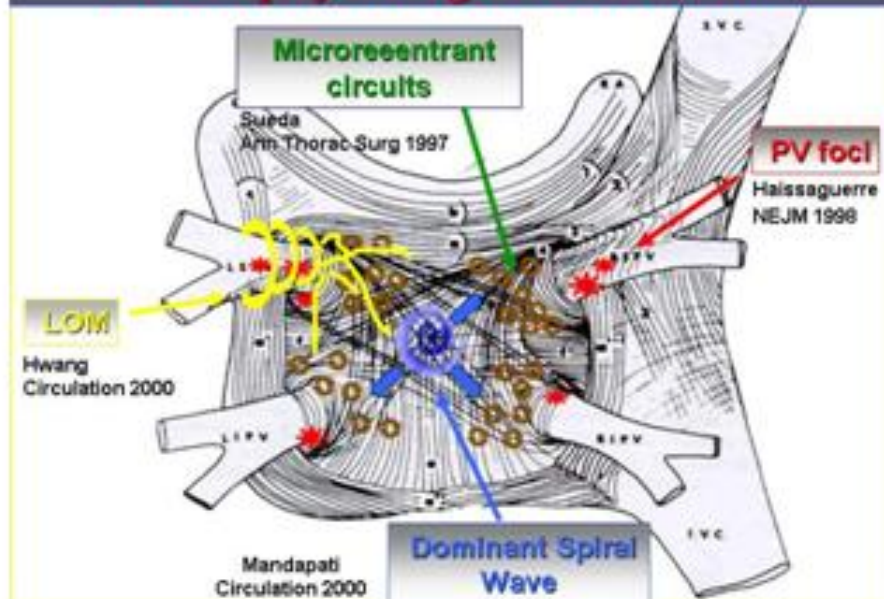
Paroxysmal
(usually ≤ 48 h)

Persistent
(>7 days or requires CV)

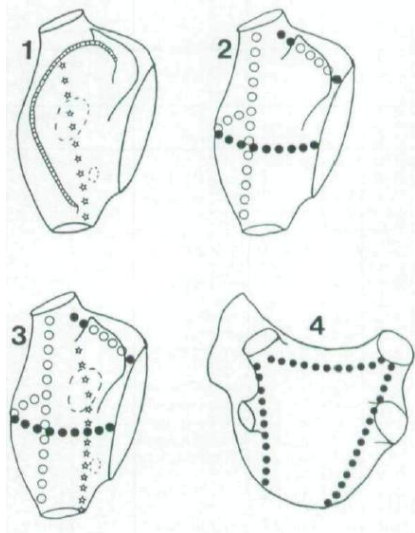
Long-standing
Persistent (>1 year)

Permanent
(accepted)

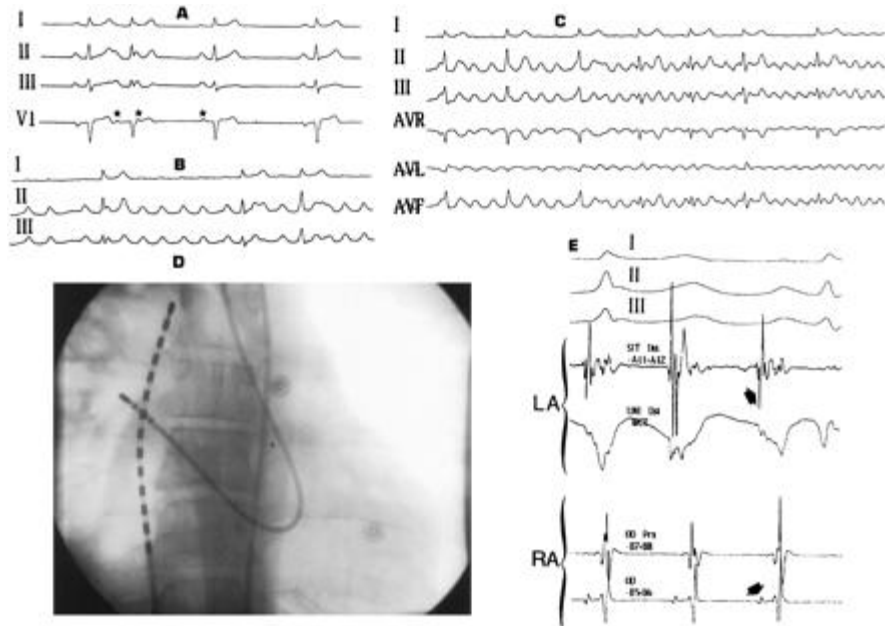
Electrophysiological EndPoints



1994 Haissaguerre Right and Left Atrial Radiofrequency Catheter Therapy of Paroxysmal Atrial Fibrillation



1997 Haissaguerre A Focal Source of Atrial Fibrillation Treated by Discrete Radiofrequency Ablation

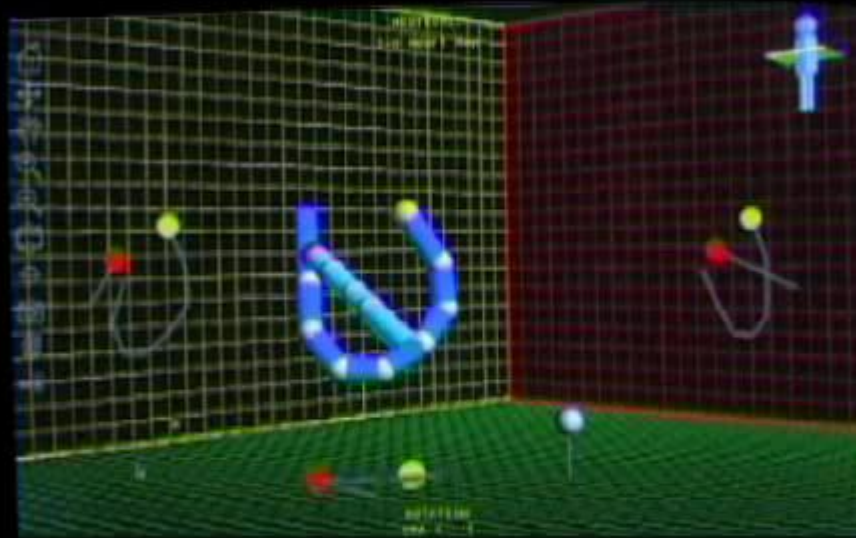


Genealogia dos sistemas de mapeamento

LocaLisa : New Technique for Real-Time 3-Dimensional Localization of Regular Intracardiac Electrodes

Fred H. M. Wittkampf, Eric F. D. Wever, Richard Derksen, Arthur A. M. Wilde, Hemanth Ramanna, Richard N. W. Hauer and Etienne O. Robles de Medina

Circulation 1999;99;1312-1317



LAT

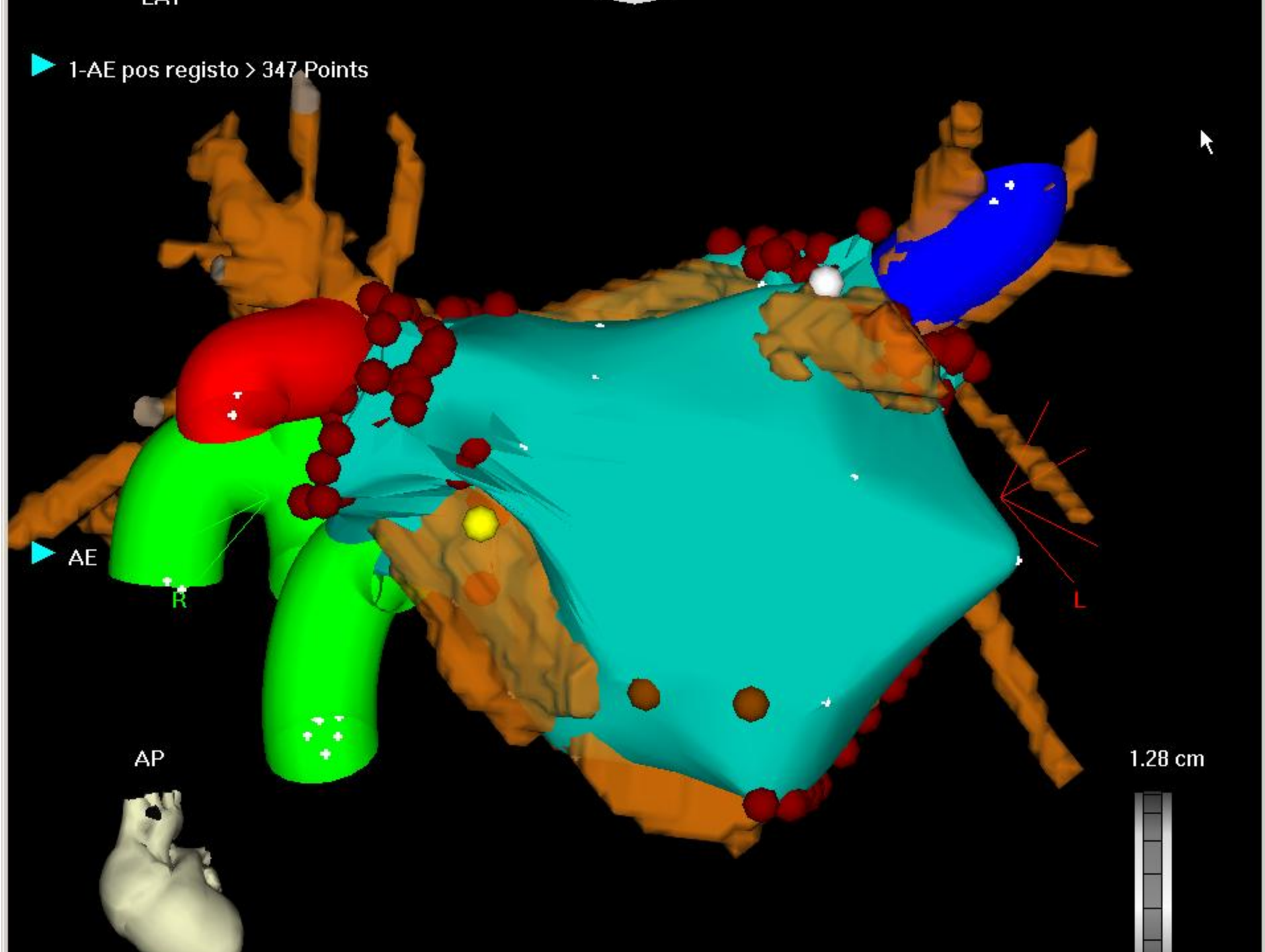
► 1-AE pos registro > 347 Points

► AE

R

AP

1.28 cm



Classifying fractionated electrograms in human atrial fibrillation using monophasic action potentials and activation mapping: Evidence for localized drivers, rate acceleration, and nonlocal signal etiologies

Sanjiv M. Narayan, MD, FHRS,* Matthew Wright, MBBS, PhD,[†] Nicolas Derval, MD,[‡] Amir Jadidi, MD,[‡] Andrei Forclaz, MD,[‡] Isabelle Nault, MD, FRCPC,[‡] Shinsuke Miyazaki, MD,[‡] Frédéric Sacher, MD,[‡] Pierre Bordachar, MD,[‡] Jacques Clémenty, MD,[‡] Pierre Jaïs, MD,[‡] Michel Haïssaguerre, MD,[‡] Mélèze Hocini, MD[‡]

CONCLUSION CFAEs in human AF represent distinct functional types that may be separated using MAPs and activation sequence. In a minority of cases, CFAEs indicate localized rapid AF sites. The majority of CFAEs reflect far-field signals, AF acceleration, or disorganization. These results may help to interpret CFAE during AF substrate mapping.

2052 Nademanee *et al.*
Target Sites for Atrial Fibrillation Ablation

JACC Vol. 43, No. 11, 2004
June 2, 2004:2044-53

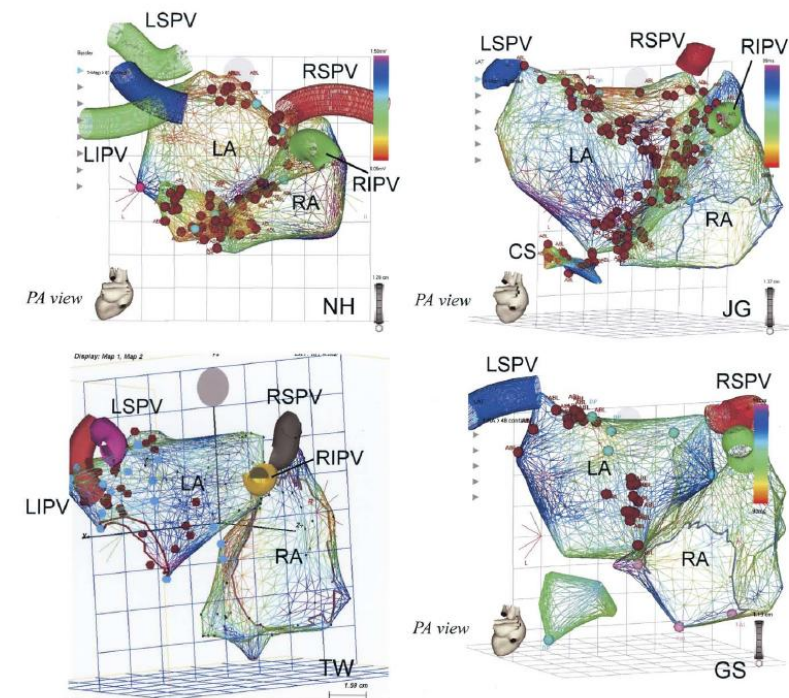
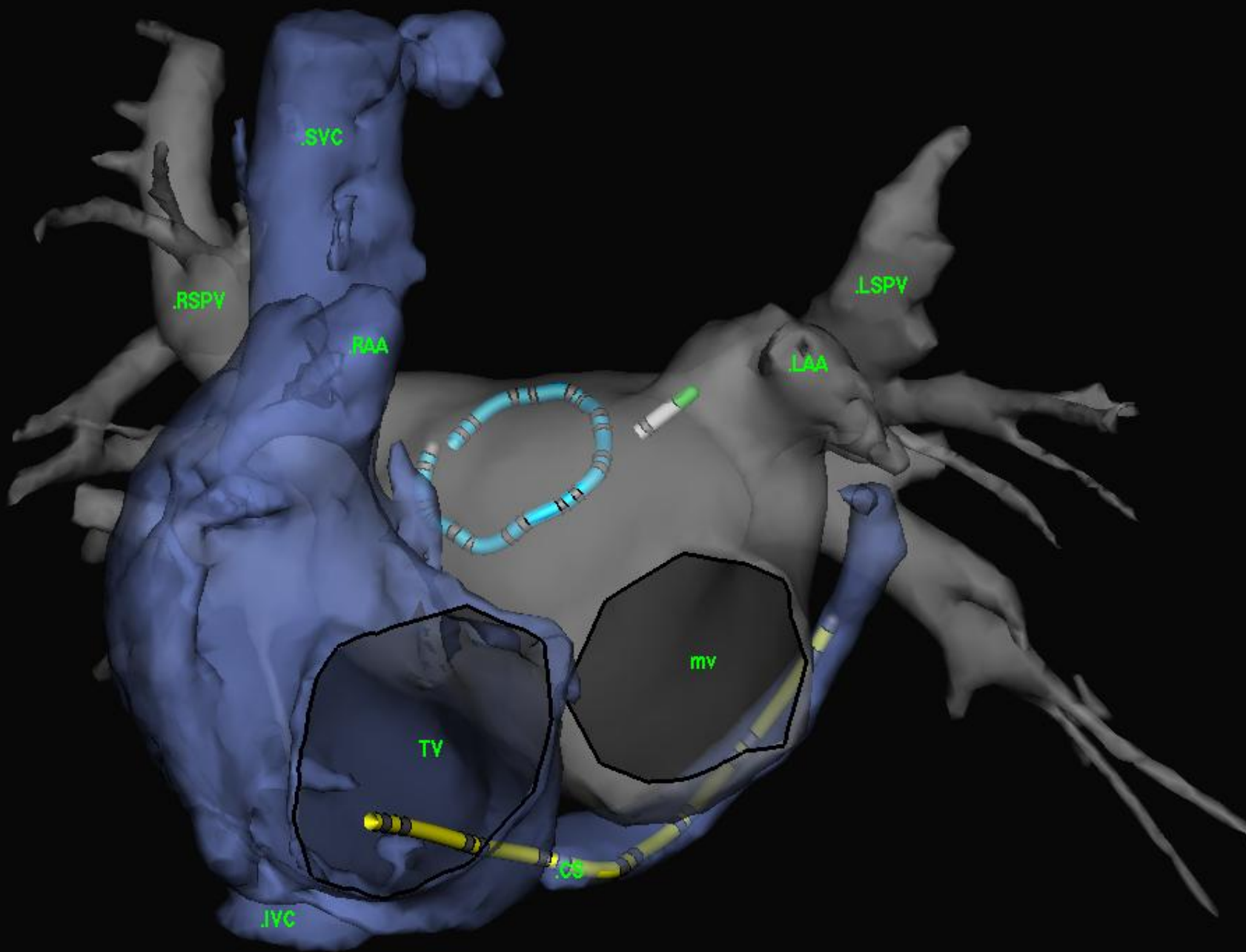


Figure 7. Posteroanterior (PA) views of four maps from four patients: N. H. and T. W. (left) were patients with paroxysmal atrial fibrillation (AF), and J. G. and G. S. (right) were patients with chronic AF. Ablations performed during AF at various areas of the left atrium (red dots) resulted in arrhythmia termination. CS = coronary sinus; LA = left atrium; LIPV = left inferior pulmonary vein; LSPV = left superior pulmonary vein; RA = right atrium; RIPV = right inferior pulmonary vein; RSPV = right superior pulmonary vein.



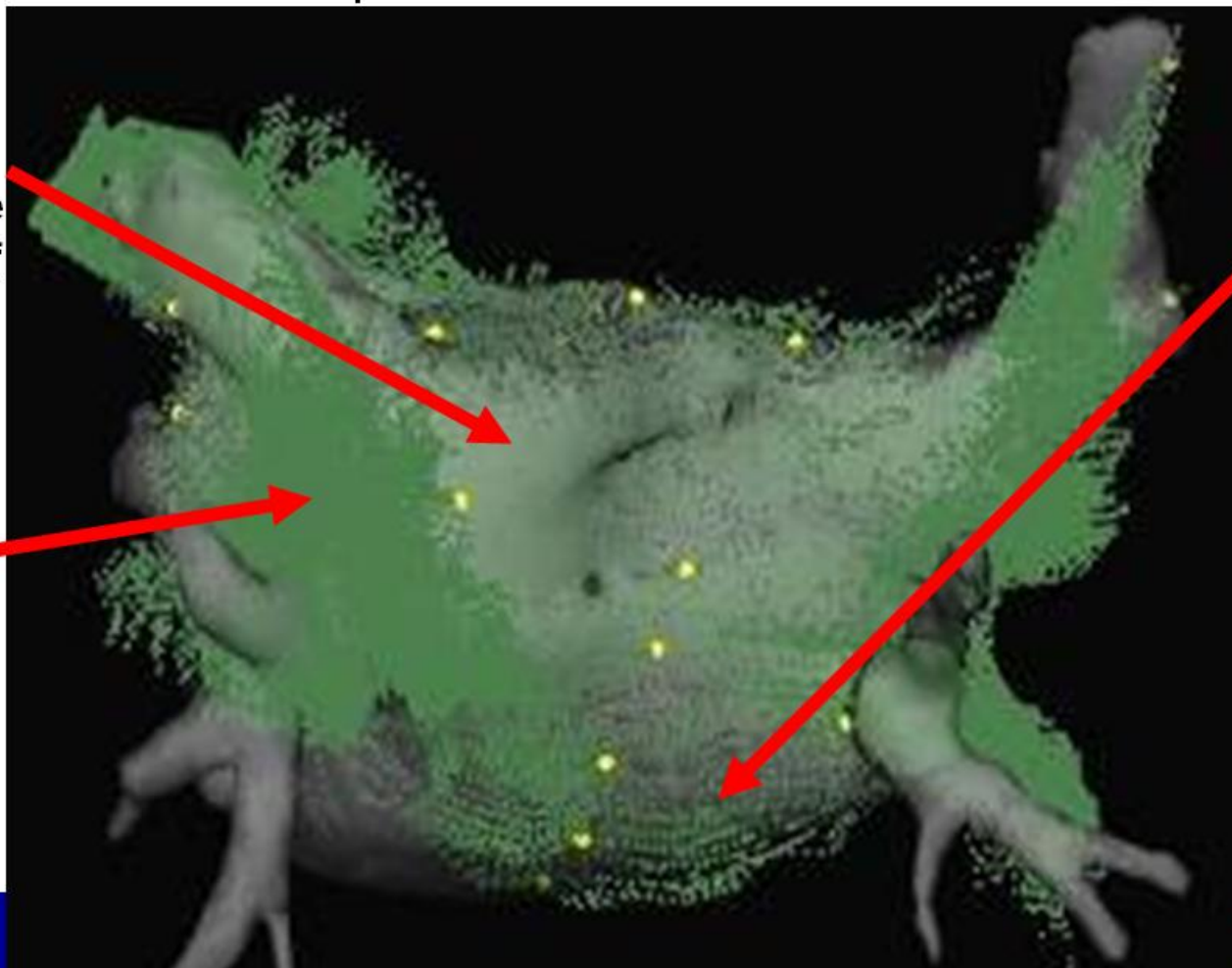


User Tips

1. Be certain to not “undersample” in any surface to ensure a thorough data set and minimize potential for errors

**Example of
“undersampled
area” (very little
or no density of
green dots)**

**Does not have
to be this
dense**



**Example of
well sampled
area (good
density of
green dots)**



outhlake Regional HC
UNKNOWN

10F Pwr M
Tis 2.1
PProc 2
/ /
11.5cm

Cardiac

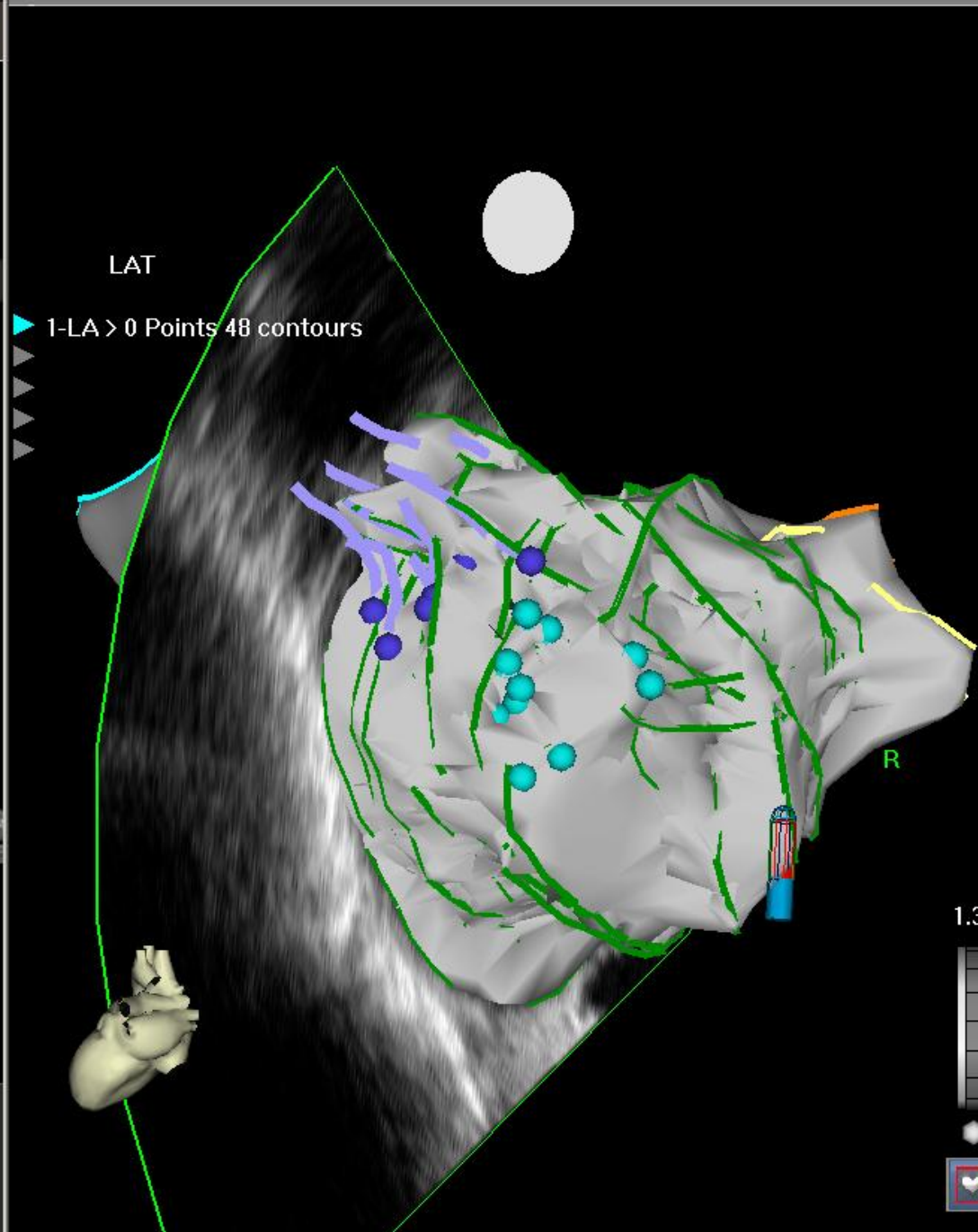
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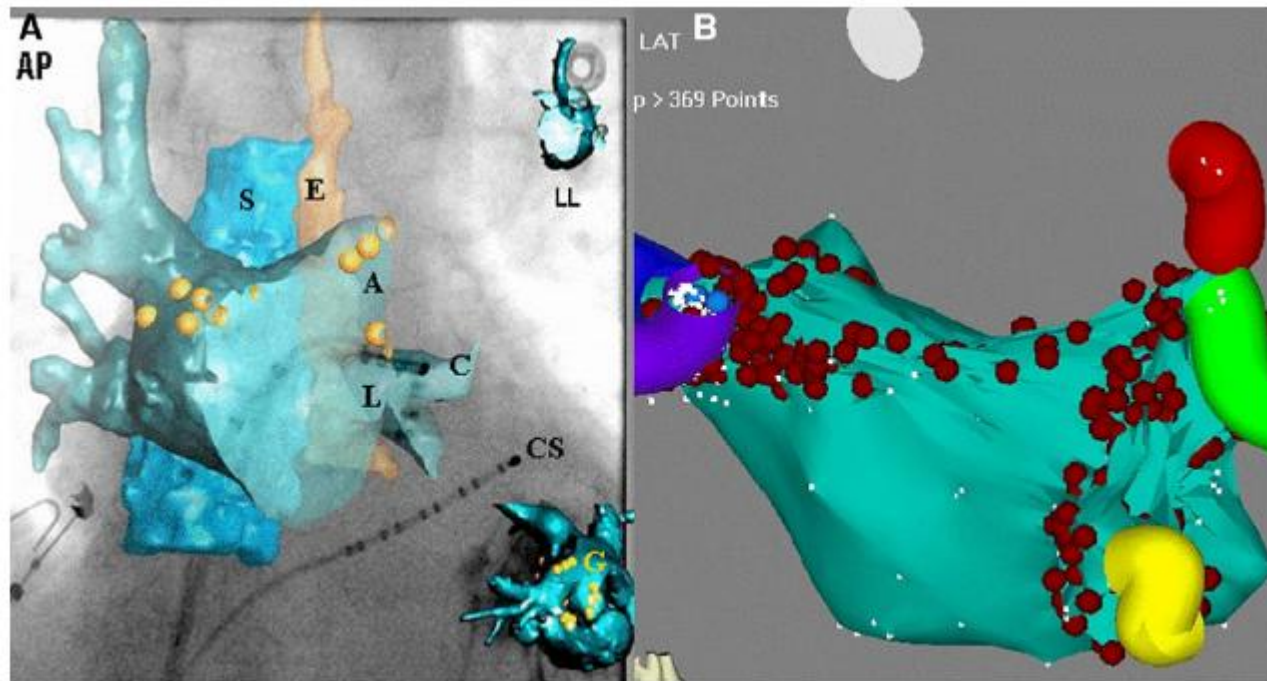


Compres

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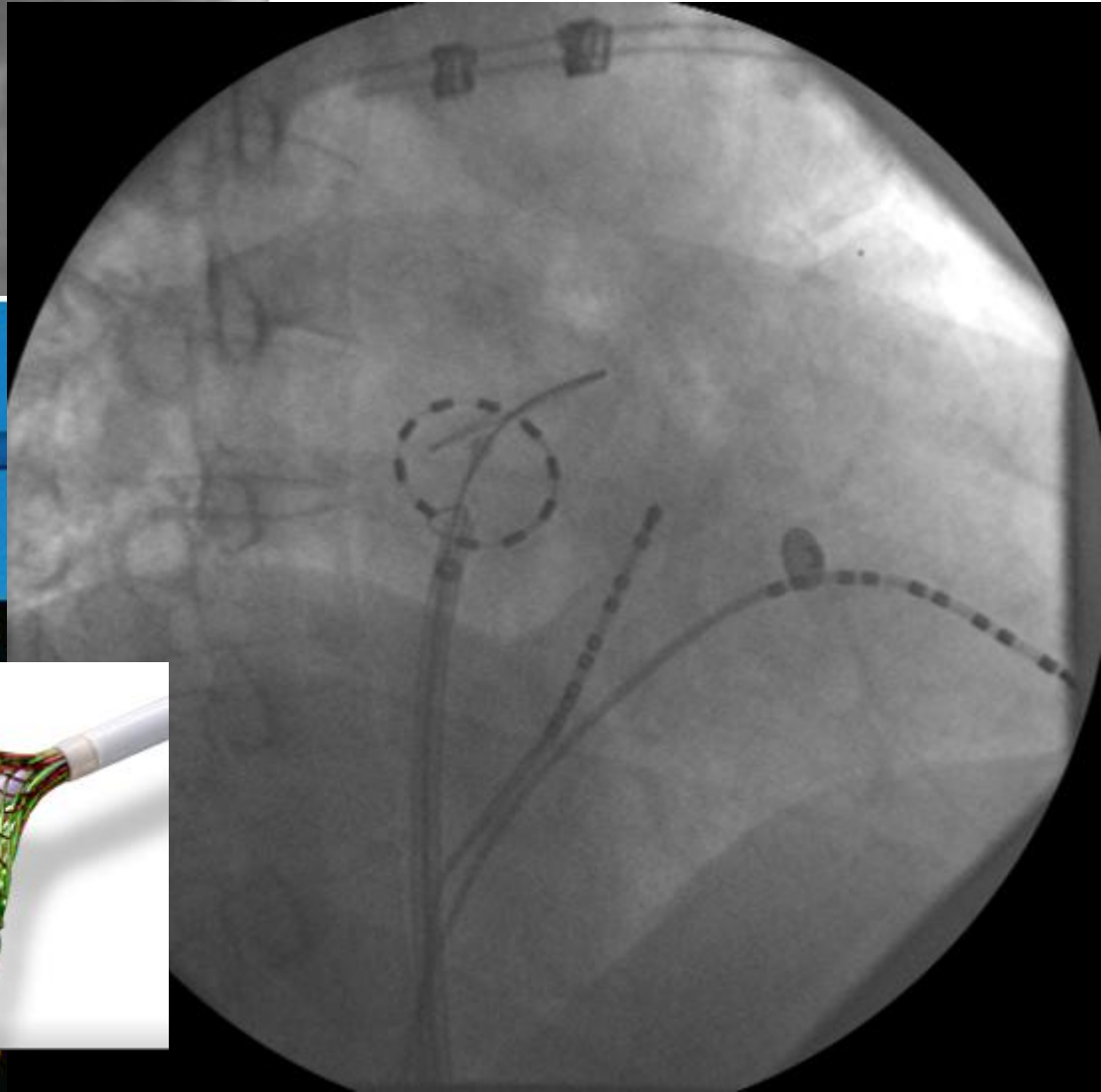
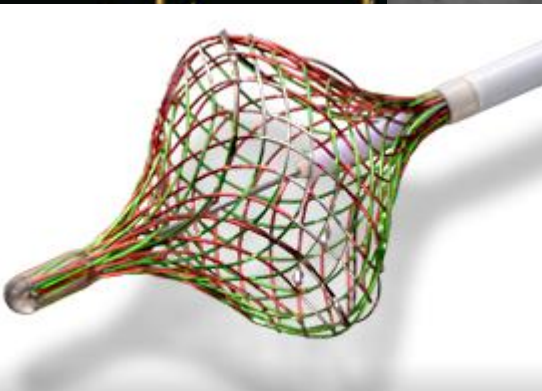
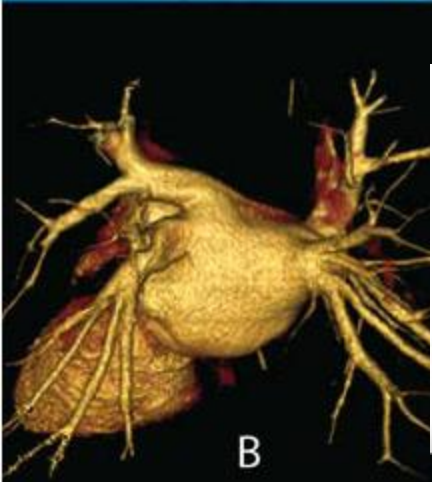
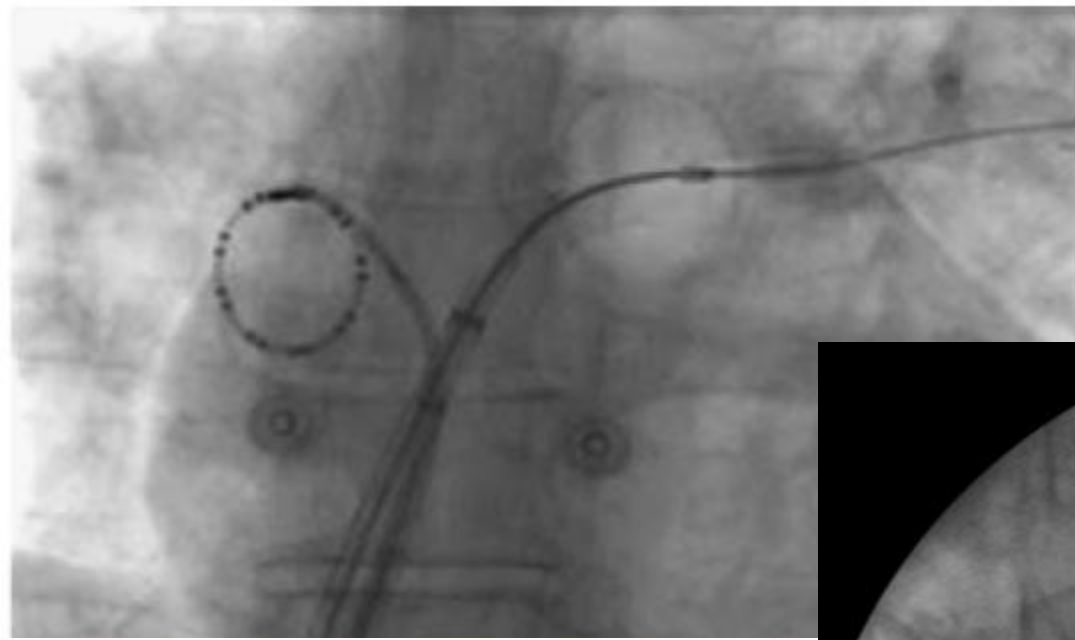
3D rotational atriangiography

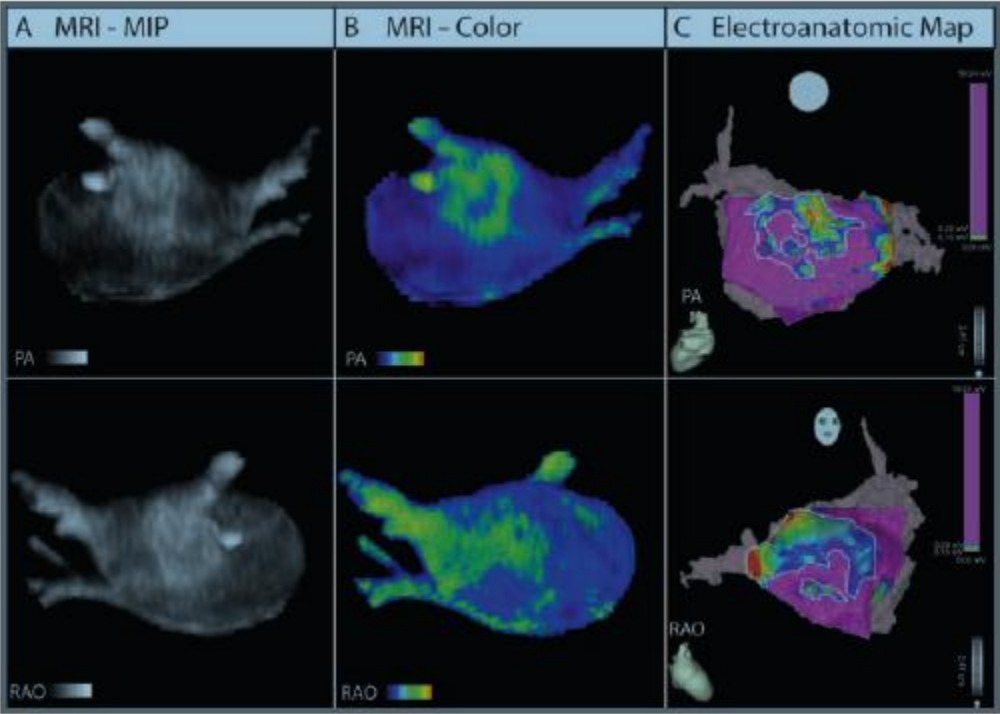
CARTO

Prospective randomized comparison between the conventional electroanatomical system and three-dimensional rotational angiography during catheter ablation for atrial fibrillation

Sébastien Knecht, MD,*[§] Matthew Wright, MBBS, PhD,*[†] Spyridon Akrivakis, MD,[‡]
 Isabelle Nault, MD,* Seiichiro Matsuo, MD,* G. Muqtada Chaudhry, MD,[‡] Charles Haffajee, MD,[‡]
 Frédéric Sacher, MD,* Nicolas Lellouche, MD,* Shinsuke Miyazaki, MD,* Andrei Forclaz, MD,*
 Amir S. Jadidi, MD,* Méléze Hocini, MD,* Phillipe Ritter, MD,* Jacques Clementy, MD,*
 Michel Haïssaguerre, MD,* Michael Orlov, MD, PhD,[‡] Pierre Jaïs, MD*

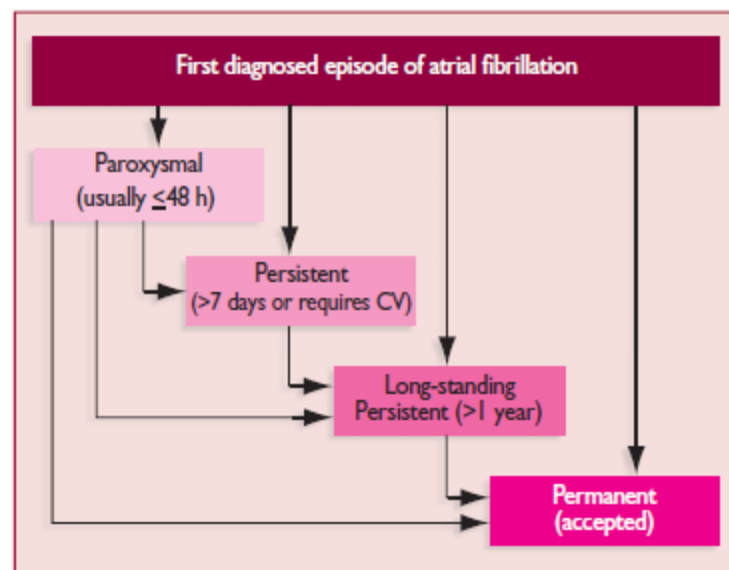
Instrumentos Tridimensionais





Guidelines for the management of atrial fibrillation

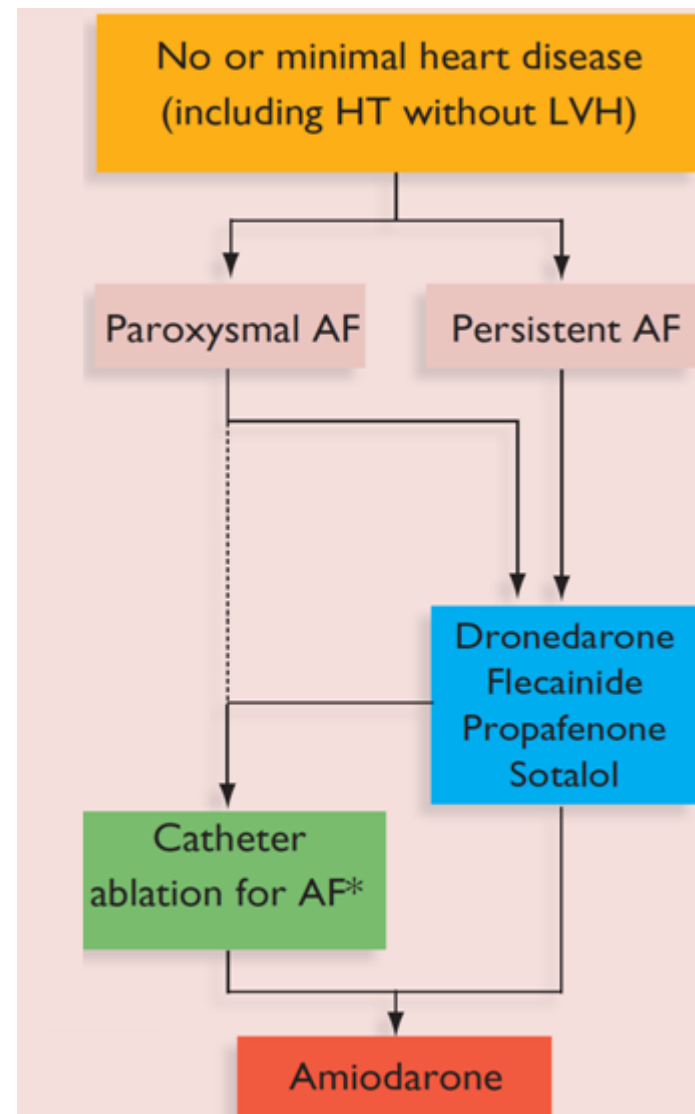
The Task Force for the Management of Atrial Fibrillation of the European Society of Cardiology (ESC)



5. Specific populations	1407
5.1 Heart failure	1407
5.2 Athletes	1407
5.3 Valvular heart disease	1408
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5.9 Hyperthyroidism	1412
5.10 Wolff–Parkinson–White syndrome	1412
5.11 Hypertrophic cardiomyopathy	1413
5.12 Pulmonary disease	1414

Guidelines for the management of atrial fibrillation

Recommendations	Class ^a	Level ^b	Ref. ^c
Ablation of common atrial flutter is recommended as part of an AF ablation procedure if documented prior to the ablation procedure or occurring during the AF ablation.	I	B	33
Catheter ablation for paroxysmal AF should be considered in symptomatic patients who have previously failed a trial of antiarrhythmic medication.	IIa	A	96, 131, 132, 133, 135, 137, 138
Ablation of persistent symptomatic AF that is refractory to antiarrhythmic therapy should be considered a treatment option.	IIa	B	33
In patients post-ablation, LMWH or i.v. UFH should be considered as 'bridging therapy' prior to resumption of systemic OAC, which should be continued for a minimum of 3 months. Thereafter, the individual stroke risk factors of the patient should be considered when determining if OAC therapy should be continued.	IIa	C	
Continuation of OAC therapy post-ablation is recommended in patients with 1 'major' ('definitive') or ≥2 'clinically relevant non-major' risk factors (i.e. CHA ₂ DS ₂ -VASc score ≥2).	IIa	B	136
Catheter ablation of AF in patients with heart failure may be considered when antiarrhythmic medication, including amiodarone, fails to control symptoms.	IIb	B	93, 94
Catheter ablation of AF may be considered prior to antiarrhythmic drug therapy in symptomatic patients despite adequate rate control with paroxysmal symptomatic AF and no significant underlying heart disease.	IIb	B	131
Catheter ablation of AF may be considered in patients with symptomatic long-standing persistent AF refractory to antiarrhythmic drugs.	IIb	C	



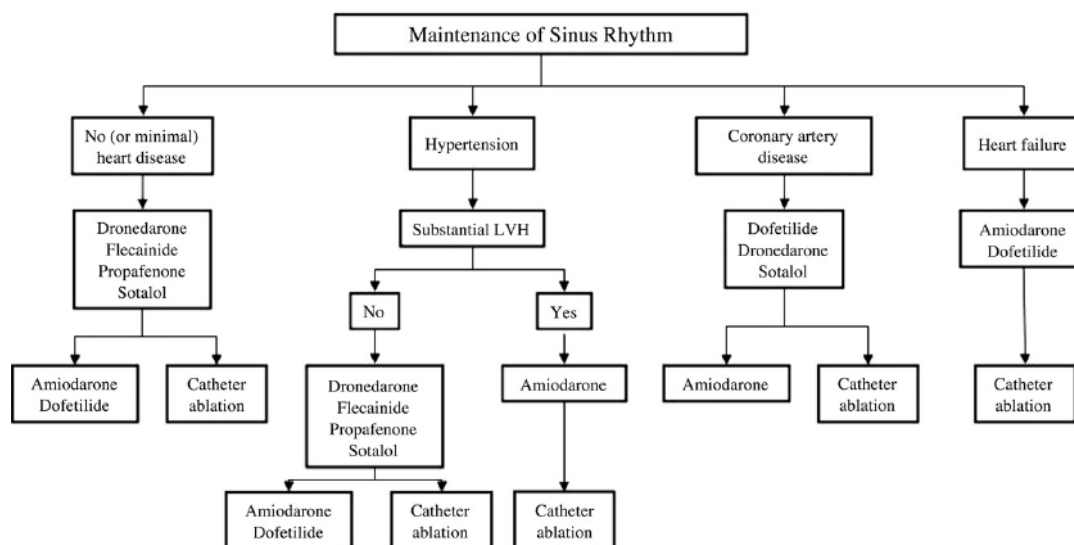
2011 ACCF/AHA/HRS Focused Update on the Management of Patients With Atrial Fibrillation (Updating the 2006 Guideline)

4. Catheter ablation now carries

- A Class I (rather than Class IIa) recommendation for treating symptomatic paroxysmal AF that is uncontrolled with antiarrhythmic agents;
- A Class IIa recommendation for treating persistent symptomatic AF;
- A Class IIb recommendation for treating symptomatic paroxysmal AF in the presence of left atrial dilatation or left ventricular (LV) dysfunction.

8.3.1.4 Future Directions in Catheter-Based Ablation Therapy for Atrial Fibrillation (New Section)

Catheter ablation to maintain sinus rhythm has been reported in trials and meta-analyses including data from more than 6900 patients.^{38–51} Patients undergoing ablation are a selected population characterized by a predominance of those with symptomatic paroxysmal AF that has failed treatment with one or more antiarrhythmic drugs, with normal size or mildly dilated atria, normal or mildly reduced ventricular function, and absence of severe pulmonary disease.



Study	Reference	Patients (n)	Age, years	Type of AF	Previous use of AAD	Ablation technique	Repeat ablation in the ablation group	Crossed to ablation in the AAD group	AF free at 1 year	
									Ablation	AAD
Krittayaphong <i>et al.</i> 2003	Online	30	55 ± 10 (ablation) 47 ± 15 (AAD)	Paroxysmal, persistent	≥1 ^a	PVI + LA lines + CTI ablation + RA lines	Not stated	Not stated	79%	40%
Wazni <i>et al.</i> 2005 (RAAFT)	134	70	53 ± 8 (ablation) 54 ± 8 (AAD)	Mainly paroxysmal	No	PVI	12% ^b	49% ^c	87%	37%
Stabile <i>et al.</i> 2005 (CACAF) ^d	Online	245	62 ± 9 (ablation) 62 ± 10 (AAD)	Paroxysmal, persistent	≥2	PVI + LA lines ± CTI ablation	No exact data	57%	56%	9%
Oral <i>et al.</i> 2006 ^e	Online	245	57 ± 9	Persistent	≥1 (mean 2.1 ± 1.2)	CPVA	26% for AF; 6% for LA flutter	77%	74%	4%
Pappone <i>et al.</i> 2006 (APAF)	135	198	55 ± 10 (ablation) 57 ± 10 (AAD)	Paroxysmal	≥2 (mean 2 ± 1)	CPVA + CTI ablation	6% for AF; 3% for atrial tachycardia	42%	86%	22%
Jais <i>et al.</i> 2008 (A4 study)	133	112	51 ± 11	Paroxysmal	≥1	PVI ± LA lines ± CTI ablation	Mean 1.8 ± 0.8, median 2 per patient	63%	89%	23%
Forleo <i>et al.</i> 2008 ^f	Online	70	63 ± 9 (ablation) 65 ± 6 (AAD)	Paroxysmal, persistent	≥1	PVI ± LA lines ± CTI ablation	Not stated	Not stated	80%	43%
Wilber <i>et al.</i> 2010 (Thermocool) ^g	96	167	55.5 (ablation) 56.1 (AAD)	Paroxysmal	≥1 (mean 1.3) ^h	PVI ± LA lines ± CFAEs ± CTI ablation ± RA lines	12.6% within 80 days after 1st procedure ⁱ	59% ^c	66%	16%
Packer <i>et al.</i> 2010 (STOP-AF) ^j	Online	245	56.7 (ablation) 56.4 (AAD)	Paroxysmal	≥1 ^b	Cryo-PVI ± LA lines	19% within 90 days after 1st procedure	79%	69.9%	7.3%

Table 13 General characteristics of rhythm control and rate control trials in patients with AF^{86–92}

Trial	Ref	Patients (n)	Mean age (years)	Mean follow-up (years)	Inclusion criteria	Primary outcome parameter	Patients reaching primary outcome (n)		
							Rate control	Rhythm control	P
PIAF (2000)	92	252	61.0	1.0	Persistent AF (7–360 days)	Symptomatic improvement	76/125 (60.8%)	70/127 (55.1%)	0.32
AFFIRM (2002)	86	4060	69.7	3.5	Paroxysmal AF or persistent AF, age ≥ 65 years, or risk of stroke or death	All-cause mortality	310/2027 (25.9%)	356/2033 (26.7%)	0.08
RACE (2002)	87	522	68.0	2.3	Persistent AF or flutter for < 1 years and 1–2 cardioversions over 2 years and oral anticoagulation	Composite: cardiovascular death, CHF, severe bleeding, pacemaker implantation, thrombo-embolic events, severe adverse effects of antiarrhythmic drugs	44/256 (17.2%)	60/266 (22.6%)	0.11
STAF (2003)	88	200	66.0	1.6	Persistent AF (> 4 weeks and < 2 years), LA size > 45 mm, CHF NYHA II–IV, LVEF $< 45\%$	Composite: overall mortality, cerebrovascular complications, CPR, embolic events	10/100 (10.0%)	9/100 (9.0%)	0.99
HOT CAFÉ (2004)	89	205	60.8	1.7	First clinically overt persistent AF (≥ 7 days and < 2 years), age 50–75 years	Composite: death, thrombo-embolic events; intracranial/major haemorrhage	1/101 (1.0%)	4/104 (3.9%)	> 0.71
AF-CHF (2008)	90	1376	66	3.1	LVEF $\leq 35\%$, symptoms of CHF, history of AF (≥ 6 h or DCC < 6 months)	Cardiovascular death	175/1376 (25%)	182/1376 (27%)	0.59
J-RHYTHM (2009)	91	823	64.7	1.6	Paroxysmal AF	Composite of total mortality, symptomatic cerebral infarction, systemic embolism, major bleeding, hospitalization for heart failure, or physical/psychological disability	89/405 (22.0%)	64/418 (15.3%)	0.012

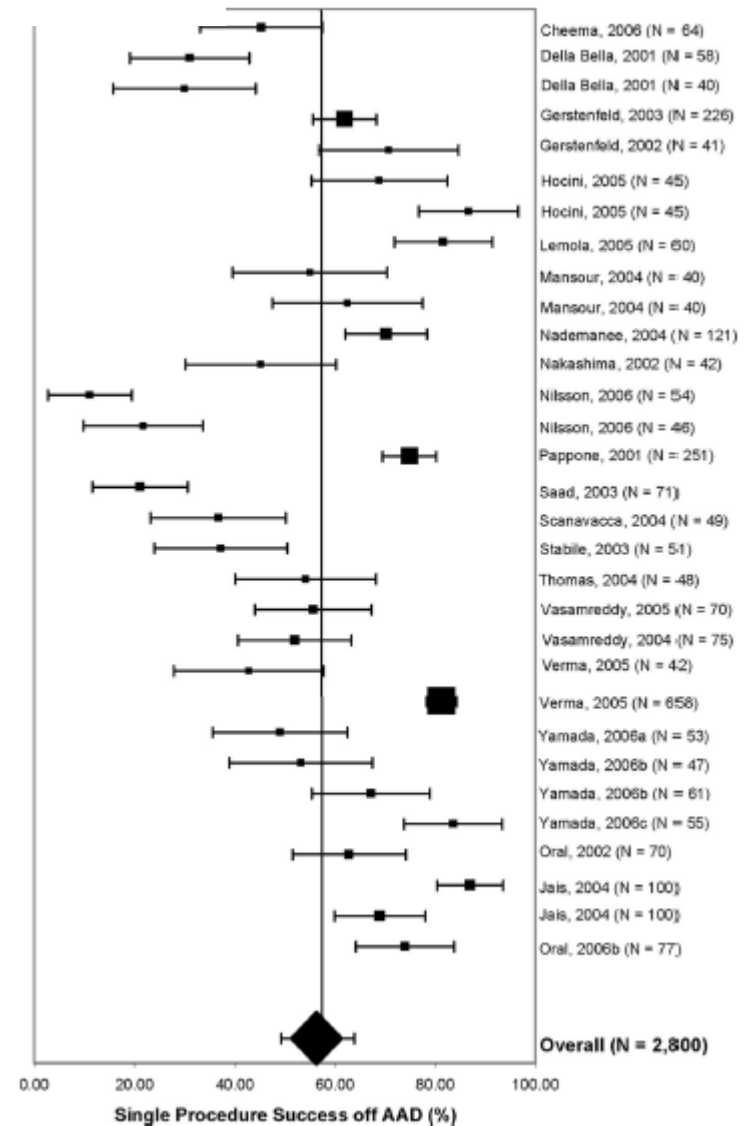
Treatment of Atrial Fibrillation With Antiarrhythmic Drugs or Radiofrequency

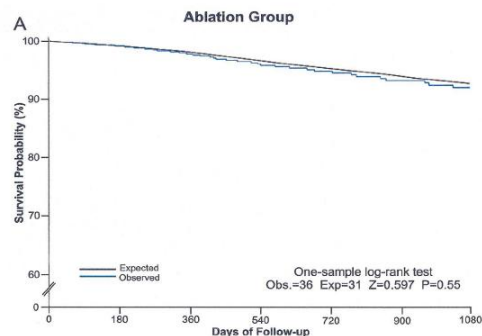
Ablation: Two Systematic Literature Reviews and Meta-Analyses

Hugh Calkins, Matthew R. Reynolds, Peter Spector, Manu Sondhi, Yingxin Xu,
Amber Martin, Catherine J. Williams and Isabella Sledge

Circ Arrhythmia Electrophysiol 2009;2;349-361; originally published online Jun 2,
2009;

- The single-procedure success rate of ablation off AAD therapy was 57% (95% CI, 50% to 64%),
- the multiple procedure success rate off AAD was 71% (95% CI, 65% to 77%),
- and the multiple procedure success rate on AAD or with unknown AAD usage was 77% (95% CI, 73% to 81%).





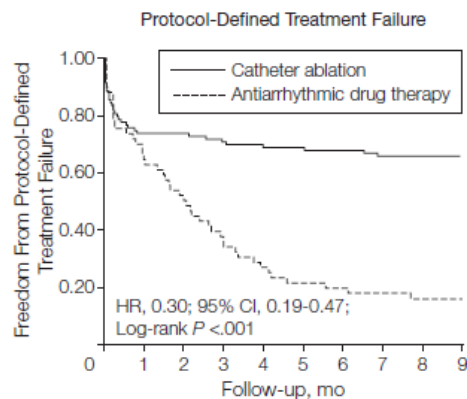
Comparison of Antiarrhythmic Drug Therapy and Radiofrequency Catheter Ablation in Patients With Paroxysmal Atrial Fibrillation

A Randomized Controlled Trial

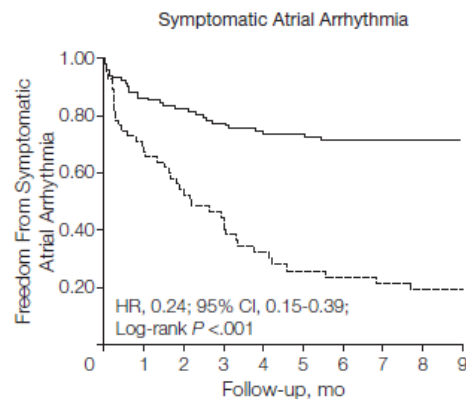
David J. Wilber, MD

Carlo Pappone, MD, PhD

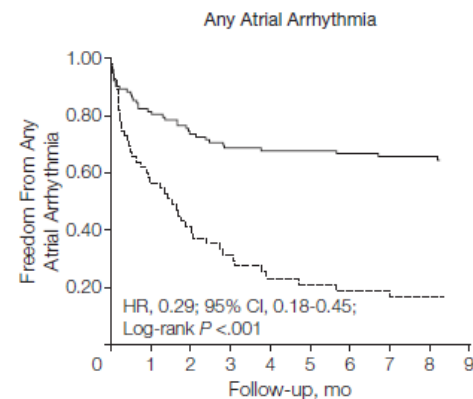
- 9-month follow-up period
- After the initial procedure, patients in the catheter ablation group were allowed up to 2 repeat ablation procedures within 80 days.



No. at risk	106	75	75	72	70	70	69	67	65	51
Catheter ablation										
Antiarrhythmic drug therapy	61	36	28	20	15	12	11	10	7	3



No. at risk	106	88	84	79	75	75	73	73	71	57
Catheter ablation										
Antiarrhythmic drug therapy	61	37	27	21	15	12	11	10	7	4



No. at risk	106	84	78	72	70	70	69	68	65	52
Catheter ablation										
Antiarrhythmic drug therapy	61	33	22	17	13	11	10	9	6	4

Long-term single procedure efficacy of catheter ablation of atrial fibrillation

Aamir Cheema • Chandrasekhar R. Vasumreddy •
Darshan Dalal • Joseph E. Marine • Jun Dong •
Charles A. Henrikson • David Spragg • Alan Cheng •
Saman Nazarian • Sunil Sinha • Henry Halperin •
Ronald Berger • Hugh Calkins

Materials and methods The patient population was comprised of 200 consecutive patients who underwent ablation (133 men; age 56 ± 11 years). Atrial fibrillation was **paroxysmal in 92 (46%)**. Success was defined as absence of symptomatic AF, off antiarrhythmic drug (AAD) after a single procedure.

Among the 200 patients in this series, 87 patients underwent radiofrequency (RF) catheter ablation using the segmental approach; 113 patients underwent RF catheter ablation using the circumferential approach.

Results: **After a follow-up of 26 ± 11 months, the single procedure long-term success rate was 28%** with an additional 7% of patients demonstrating improvement.

After including repeat procedures in 64 patients, the overall long-term success rate was 41% with 11% demonstrating improvement.

Further subgroup analysis of 48 paroxysmal AF patients considered to be optimal candidates for the procedure, revealed a long-term success rate of 69% with an additional 4% demonstrating improvement.

Early recurrences are observed in nearly two thirds of patients, and when present, predict long-term failure.

Very late recurrences after being free of AF for 12 months occur in 4% of patients.

Approximately 19% of the patients with short-term success develop failure, when the duration of follow up is extended from six to 26 ± 11 months.

Long-term single procedure success was achieved in only 15% of patients with an early recurrence as compared to 50% of patients who did not experience an early recurrence ($P < 0.01$).

- A major limitation of the published literature concerning AF ablation is the short-term follow-up in most studies.
- The Food and Drug Administration (FDA) recommends using the endpoint of “freedom from symptomatic atrial fibrillation at 1 year” in the clinical studies on the catheter ablation of AF.
- Another important limitation of most previously reported studies is that the results reflect patient outcomes after one or more ablation procedures.

Therefore, the true long-term “single procedure” success of catheter ablation remains poorly defined.

Catheter ablation treatment in patients with drug-refractory atrial fibrillation: a prospective, multi-centre, randomized, controlled study (Catheter Ablation For The Cure Of Atrial Fibrillation Study)[†]

Giuseppe Stabile^{1*}, Emanuele Bertaglia², Gaetano Senatore³, Antonio De Simone¹, Franco Zoppo², Giovanni Donnici³, Pietro Turco¹, Pietro Pascotto², Massimo Fazzari³, and Dino Franco Vitale⁴
European Heart Journal (2006) 27, 216–221

Aims We conducted a multi-centre, prospective, controlled, randomized trial to investigate the adjunctive role of ablation therapy to antiarrhythmic drug therapy in preventing atrial fibrillation (AF) relapses in patients with paroxysmal or persistent AF in whom antiarrhythmic drug therapy had already failed.

Methods and results One hundred and thirty seven patients were **randomized to ablation and antiarrhythmic drug therapy (ablation group)** or antiarrhythmic drug therapy alone (control group). In the ablation group, patients underwent cavo-tricuspid and left inferior pulmonary vein (PV)-mitral isthmus ablation plus circumferential PV ablation. The primary end-point of the **study was the absence of any recurrence of atrial arrhythmia lasting .30 s in the 1-year follow-up period, after 1-month blanking period.** Three (4.4%) major complications were related to ablation: one patient had a stroke during left atrium ablation, another suffered transient phrenic paralysis, and the third had a pericardial effusion which required pericardiocentesis. **After 12 months of follow-up, (median 18 months) 63/69 (91.3%) control group patients had at least one AF recurrence, whereas 30/68 (44.1%) (P , 0.001) ablation group patients had atrial arrhythmia recurrence** (four patients had atrial flutter, 26 patients AF).

Conclusion Ablation therapy combined with antiarrhythmic drug therapy is superior to antiarrhythmic drug therapy alone in preventing atrial arrhythmia recurrences in patients with paroxysmal or persistent AF in whom antiarrhythmic drug therapy has already failed.

After a 1-month blanking period, patients received a transtelephonic ECG recorder (Sorin Life Watch, Italy), and a **30 s ECG was scheduled each day for 3 months**. Moreover, patients were instructed to obtain an **ECG in the event of palpitations**. Standard **ECG, Holter monitoring**, and transthoracic echocardiography were scheduled **at 1, 4, 7, 10, and 13 months**.

Does catheter ablation cure atrial fibrillation? Single-procedure outcome of drug-refractory atrial fibrillation ablation: a 6-year multicentre experience

Emanuele Bertaglia^{1*}, Claudio Tondo², Antonio De Simone³, Franco Zoppo¹,
Massimo Mantica⁴, Pietro Turco³, Assunta Iuliano⁵, Giovanni Forleo⁴,
Vincenzo La Rocca³, and Giuseppe Stabile⁵

Even patients in whom catheter ablation prevents AF recurrence for 1 year should not be considered 'cured', since 40% of them will suffer AF recurrence over a long-term clinical follow-up

Long-Term Results of Catheter Ablation in Paroxysmal Atrial Fibrillation: Lessons From a 5-Year Follow-Up

Feifan Ouyang, Roland Titz, Julian Chun, Boris Schmidt, Erik Wissner, Thomas Zerm, Kars Neven, Bulent Köktürk, Melanie Konstantinidou, Andreas Metzner, Alexander Fuernkranz and Karl-Heinz Kuck

Circulation 2010;122:2368-2377; originally published online Nov 22, 2010;

Sinus rhythm was present in 75 patients (46.6%) after the initial procedure during a median follow-up period of 4.8 years (0.33 to 5.5 years). A second procedure was performed in 66 and a third procedure in 12 patients.

Catheter Ablation for Atrial Fibrillation

Are Results Maintained at 5 Years of Follow-Up?

Rukshen Weerasooriya, BMEDSc(HONS), MBBS,*† Paul Khairy, MD, PhD,‡ Jean Litalien, MD,*
Laurent Macle, MD,‡ Meleze Hocini, MD,* Frederic Sacher, MD,* Nicolas Lellouche, MD,*
Sebastien Knecht, MD,* Matthew Wright, PhD, MD,* Isabelle Nault, MD,* Shinsuke Miyazaki, MD,*
Christophe Scavee, MD,* Jacques Clementy, MD,* Michel Haissaguerre, MD,* Pierre Jais, MD*

Bordeaux-Pessac, France; Crawley, Western Australia; and Montreal, Quebec, Canada

Arrhythmia-free survival rates after a **single catheter ablation procedure** were **40%, 37%, and 29% at 1, 2, and 5 years**, respectively, with most recurrences over the first 6 months. Patients with long-standing persistent AF experienced a higher recurrence rate than those with paroxysmal or persistent forms (hazard ratio [HR]: 1.9, 95% confidence interval [CI]: 1.0 to 3.5; p 0.0462). In all, 175 procedures were performed, with a median of 2 per patient. Arrhythmia-free survival following the last catheter ablation procedure was 87%, 81%, and 63% at 1, 2, and 5

Long-term quality of life after ablation of atrial fibrillation the impact of recurrence, symptom relief, and placebo effect.

Wokhlu A, Monahan KH, Hodge DO, Asirvatham SJ, Friedman PA, Munger TM, Bradley DJ, Bluhm CM, Haroldson JM, Packer DL.

Conclusions: AF ablation produces sustained QoL improvement at 2 years in patients with and without recurrence. AF-specific symptom assessment more accurately reflects ablative efficacy.

PERCEPTION OF ATRIAL FIBRILLATION BEFORE AND AFTER RADIOFREQUENCY CATHETER ABLATION: CLINICAL RELEVANCE OF ASYMPTOMATIC ARRHYTHMIA RECURRENCE BASED ON A DETAILED ANALYSIS OF MORE THAN 75.000 HOURS OF ECG-RECORDINGS.

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Conclusions: Pts. with highly symptomatic AF also exhibit a substantial amount of ASYM arrhythmia (54% of AF time, 22% of AF episodes). After ablation the amount of ASYM AF increased, with half of the episodes being ASYM. Furthermore, 36% of the pts. with AF recurrences at the 6 months follow up were completely ASYM during that 7-d-ECG.

Our data show, that a judgement on the efficacy of percutaneous AF ablation based on patient's symptoms substantially overestimates the success rate. Objective follow up strategies, applied in a close manner, are needed for a through measurement of the real outcome.

(a) Risk factors for stroke and thrombo-embolism in non-valvular AF		
'Major' risk factors		'Clinically relevant non-major' risk factors
Previous stroke, TIA, or systemic embolism Age ≥ 75 years		Heart failure or moderate to severe LV systolic dysfunction (e.g. LV EF $\leq 40\%$) Hypertension - Diabetes mellitus Female sex - Age 65–74 years Vascular disease ^a
(b) Risk factor-based approach expressed as a point based scoring system, with the acronym CHA ₂ DS ₂ -VASc (Note: maximum score is 9 since age may contribute 0, 1, or 2 points)		
Risk factor		Score
Congestive heart failure/LV dysfunction		1
Hypertension		1
Age ≥ 75		2
Diabetes mellitus		1
Stroke/TIA/thrombo-embolism		2
Vascular disease ^a		1
Age 65–74		1
Sex category (i.e. female sex)		1
Maximum score		9
(c) Adjusted stroke rate according to CHA ₂ DS ₂ -VASc score		
CHA ₂ DS ₂ -VASc score	Patients (n=7329)	Adjusted stroke rate (%/year) ^b
0	1	0%
1	422	1.3%
2	1230	2.2%
3	1730	3.2%
4	1718	4.0%
5	1159	6.7%
6	679	9.8%
7	294	9.6%
8	82	6.7%
9	14	15.2%

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The risk of thromboembolism and need for oral anticoagulation after successful atrial fibrillation ablation.

Themistoclakis S, Corrado A, Marchlinski FE, Jais P, Zado E, Rossillo A, Di Biase L, Schweikert RA, Saliba WJ, Horton R, Mohanty P, Patel D, Burkhardt DJ, Wazni OM, Bonso A, Callans DJ, Haissaguerre M, Raviele A, Natale A.

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Comment in:

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Abstract

OBJECTIVES: The aim of this multicenter study was to evaluate the safety of discontinuing oral anticoagulation therapy (OAT) after apparently successful pulmonary vein isolation.

BACKGROUND: Atrial fibrillation (AF) is associated with an increased risk of thromboembolic events (TE) and often requires OAT. Pulmonary vein isolation is considered an effective treatment for AF.

METHODS: We studied 3,355 patients, of whom 2,692 (79% male, mean age 57 +/- 11 years) discontinued OAT 3 to 6 months after ablation (Off-OAT group) and 663 (70% male, mean age 59 +/- 11 years) remained on OAT after this period (On-OAT group). CHADS(2) (congestive heart failure, hypertension, age [75 years and older], diabetes mellitus, and a history of stroke or transient ischemic attack) risk scores of 1 and > or =2 were recorded in 723 (27%) and 347 (13%) Off-OAT group patients and in 261 (39%) and 247 (37%) On-OAT group patients, respectively.

RESULTS: During follow-up (mean 28 +/- 13 months vs. 24 +/- 15 months), 2 (0.07%) Off-OAT group patients and 3 (0.45%) On-OAT group patients had an ischemic stroke (p = 0.06). No other thromboembolic events occurred. No Off-OAT group patient with a CHADS(2) risk score of > or =2 had an ischemic stroke. A major hemorrhage was observed in 1 (0.04%) Off-OAT group patient and 13 (2%) On-OAT group patients (p < 0.0001).

CONCLUSIONS: In this nonrandomized study, the risk-benefit ratio favored the suspension of OAT after successful AF ablation even in patients at moderate-high risk of TE. This conclusion needs to be confirmed by future large randomized trials.

[Circ Arrhythm Electrophysiol.](#) 2010 Oct 1;3(5):452-7. Epub 2010 Sep 21.

Efficacy and risk of atrial fibrillation ablation before 45 years of age.

[Leong-Sit P](#), [Zado E](#), [Callans DJ](#), [Garcia F](#), [Lin D](#), [Dixit S](#), [Bala R](#), [Riley MP](#), [Hutchinson MD](#), [Cooper J](#), [Gerstenfeld EP](#), [Marchlinski FE](#).

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Comment in:

[Circ Arrhythm Electrophysiol.](#) 2010 Oct 1;3(5):425-7.

Abstract

BACKGROUND: Young patients with atrial fibrillation (AF) tend to be more symptomatic and less willing to take long-term medications, yet catheter ablation remains recommended as second-line therapy for AF regardless of age. This study seeks to characterize the effectiveness and risk of AF ablation in the young.

METHODS AND RESULTS: Consecutive (n=1548) patients who underwent 2038 AF ablation procedures were included. Major procedural complications and efficacy were analyzed on the basis of age at the initial procedure: <45 years (group 1), 45 to 54 years (group 2), 55 to 64 years (group 3), and ≥65 years (group 4). AF control was defined as no or rare AF on or off antiarrhythmic drugs. The primary outcome of AF control was similar in all groups; it was achieved in 87% in group 1, 88% in group 2, 88% in group 3, and 82% in group 4 (P=0.06). However, more group 1 patients demonstrated freedom from AF off antiarrhythmic drugs (76%) compared with group 2 at 68%, group 3 at 65%, and group 4 at 53% (P<0.001). There were no major complications in group 1, 10 (1.7%) in group 2, 14 (1.4%) in group 3, and 10 (2.6%) in group 4 (P=0.01).

CONCLUSIONS: In patients younger than 45 years, there is a lower major complication rate and a comparable efficacy rate, with a greater chance of being AF free without antiarrhythmic drugs. These findings suggest that it may be appropriate to consider ablative therapy as first-line therapy in this age group.



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