OS DOENTES COM FA PERSISTENTE DE LONGA DURAÇÃO DEVEM SER CANDIDATOS A ABLAÇÃO POR CATETER? NÃO!

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FA PERSISTENTE DE LONGA DURAÇÃO

TRATADA COM ABLAÇÃO

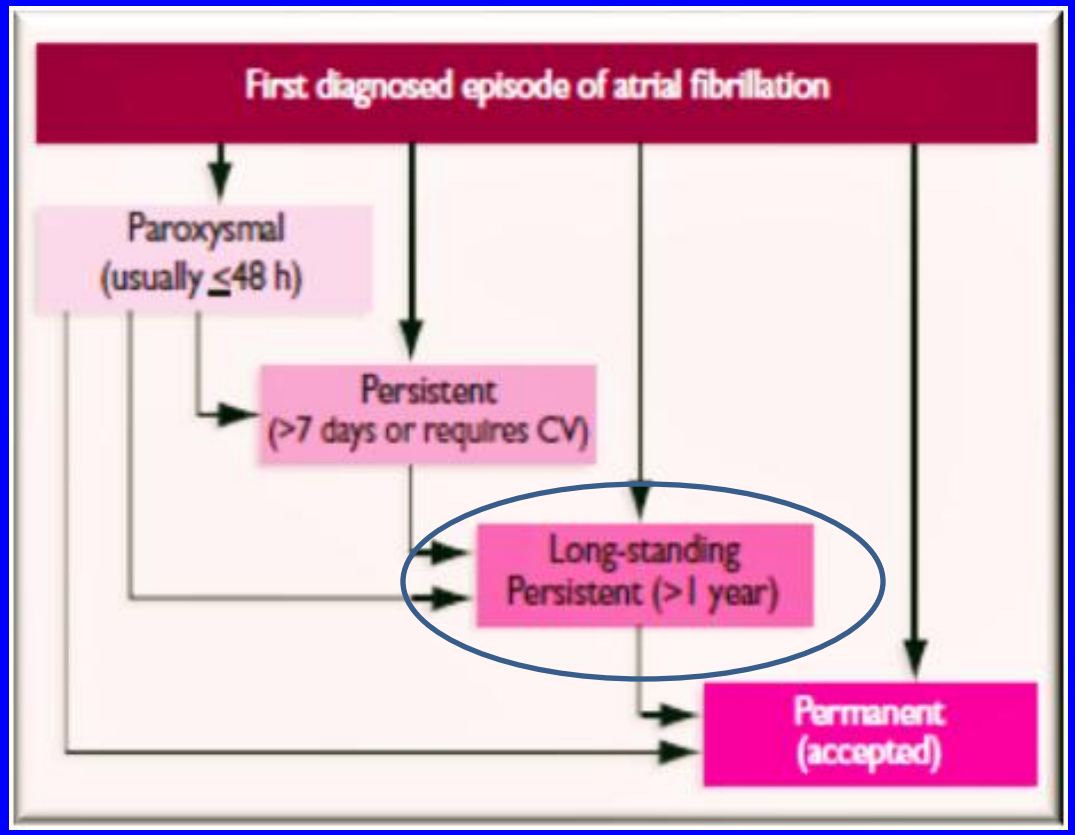
Several randomized clinical trials have shown superiority of catheter ablation over AAD therapy to achieve SR and to improve symptoms and quality of life

Parkash, et al. JCE 2011

Indications for catheter atrial fibrillation ablation

- Symptomatic AF refractory or intolerant to at least one class 1 or 3 antiarrhythmics.
- In rare clinical situations, it may be appropriate to perform ablation as 1st-line therapy.

Expert Consensus,HRS/EHRA/ECAS 2012

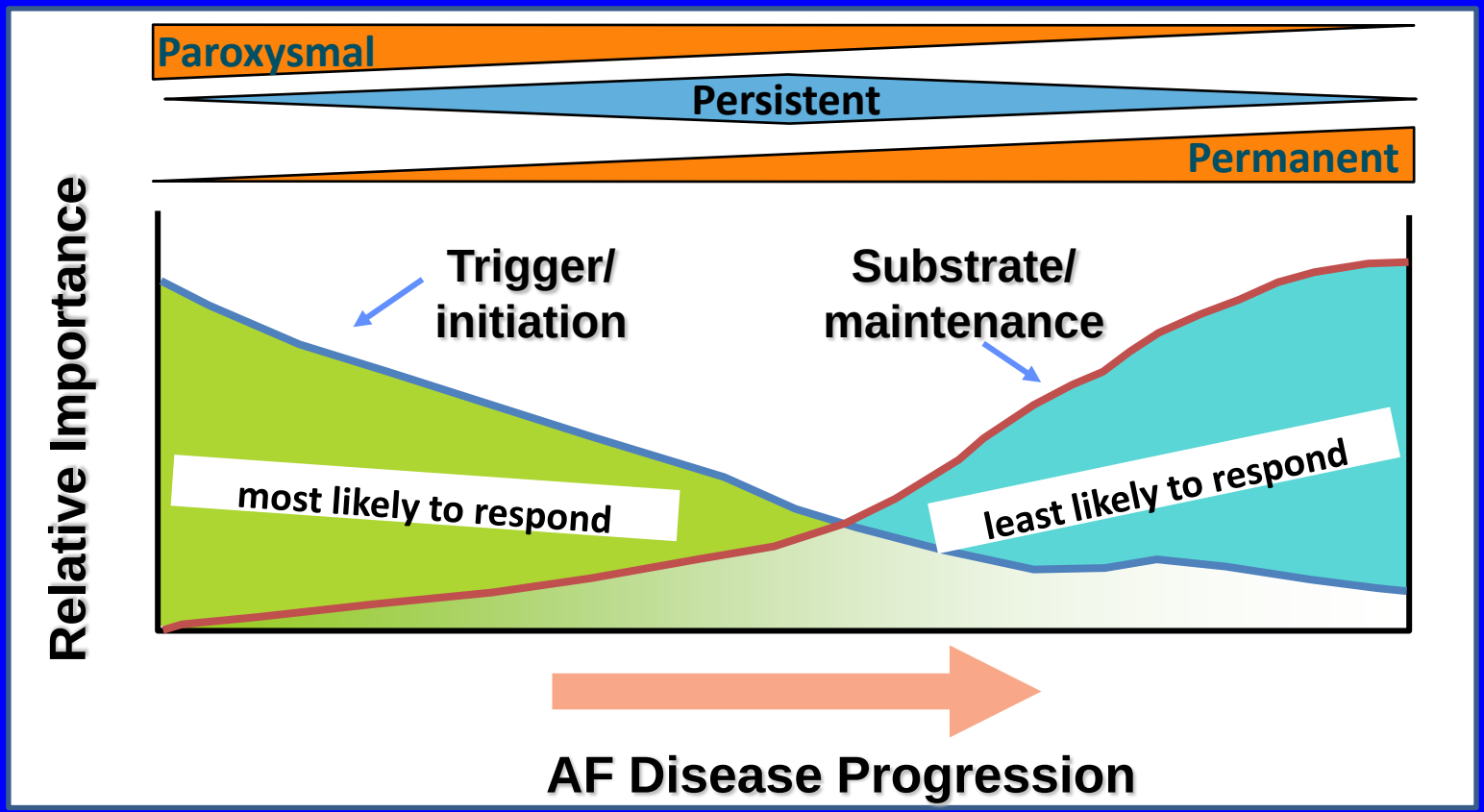


Episodes of ≤48h terminated with cardioversion are classified as paroxysmal AF

	CLASS	LEVEL
INDICATIONS FOR CATHETER ABLATION of AF		
Symptomatic AF refractory or intolerant to at least one Class 1 or 3 antiarrhythmic medication		
Paroxysmal: Catheter ablation is recommended*	I	A
Persistent: Catheter ablation is reasonable	IIa	B
Longstanding Persistent: Catheter ablation may be considered	IIb	B
Symptomatic AF prior to initiation of antiarrhythmic drug therapy with a Class 1 or 3 antiarrhythmic agent		
Paroxysmal: Catheter ablation is reasonable	IIa	B
Persistent: Catheter ablation may be considered	IIb	C
Longstanding Persistent: Catheter ablation may be considered	IIb	C

In persistent and long-standing persistent AF results are not yet satisfactory

Luigi Di Biase, Current Opin Cardiol 2013



M. Alessie

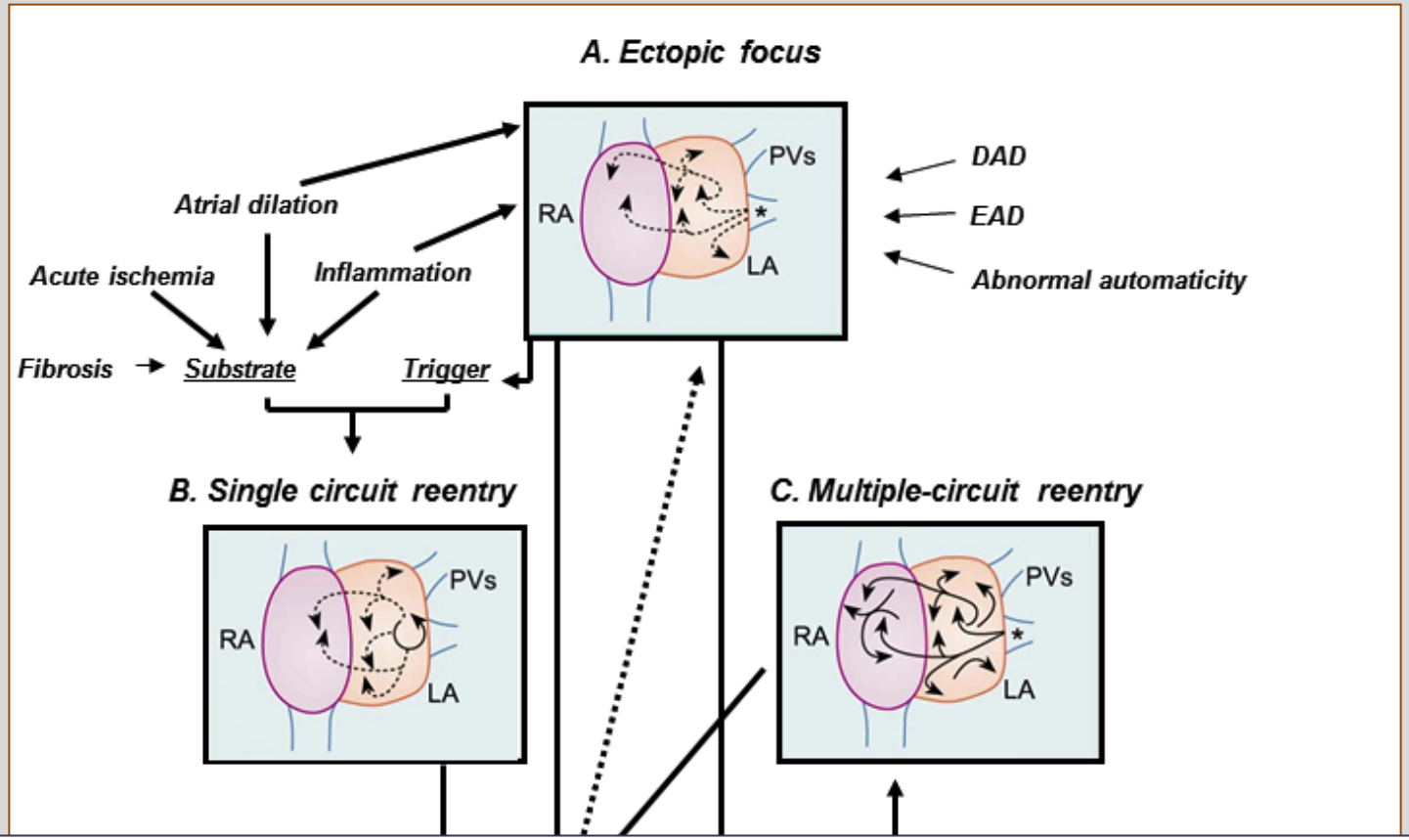
ATRIAL REMODELING

… once initiated, AF alters atrial electrical and structural properties in a way that promotes its own maintenance and recurrences.

… with resistance to sinus rhythm conversion.

Chou & Chen, JCE 2008
Muntean et al., J Clin Exp Cardiolog 2013

- **Electrical**
  - heterogeneous shortening of ARP
  - ↓ conduction velocity
  - ↓ action potential duration
- **Molecular**
  - changes in atrial ion channels
  - changes in connexins distribution
- **Structural**
  - ↓ contraction (stunning)
  - dilatation and stretching
- **Autonomic**
  - vagal stimulation
  - heterogeneous sympathetic innervation
- **Celular**
  - apoptosis, fibrosis, anisotropy



Patients with long-lasting persistent vs. persistent AF have:

-larger LA surface area (*134±38 cm2 vs. 98±9 cm2, p=0.02*)

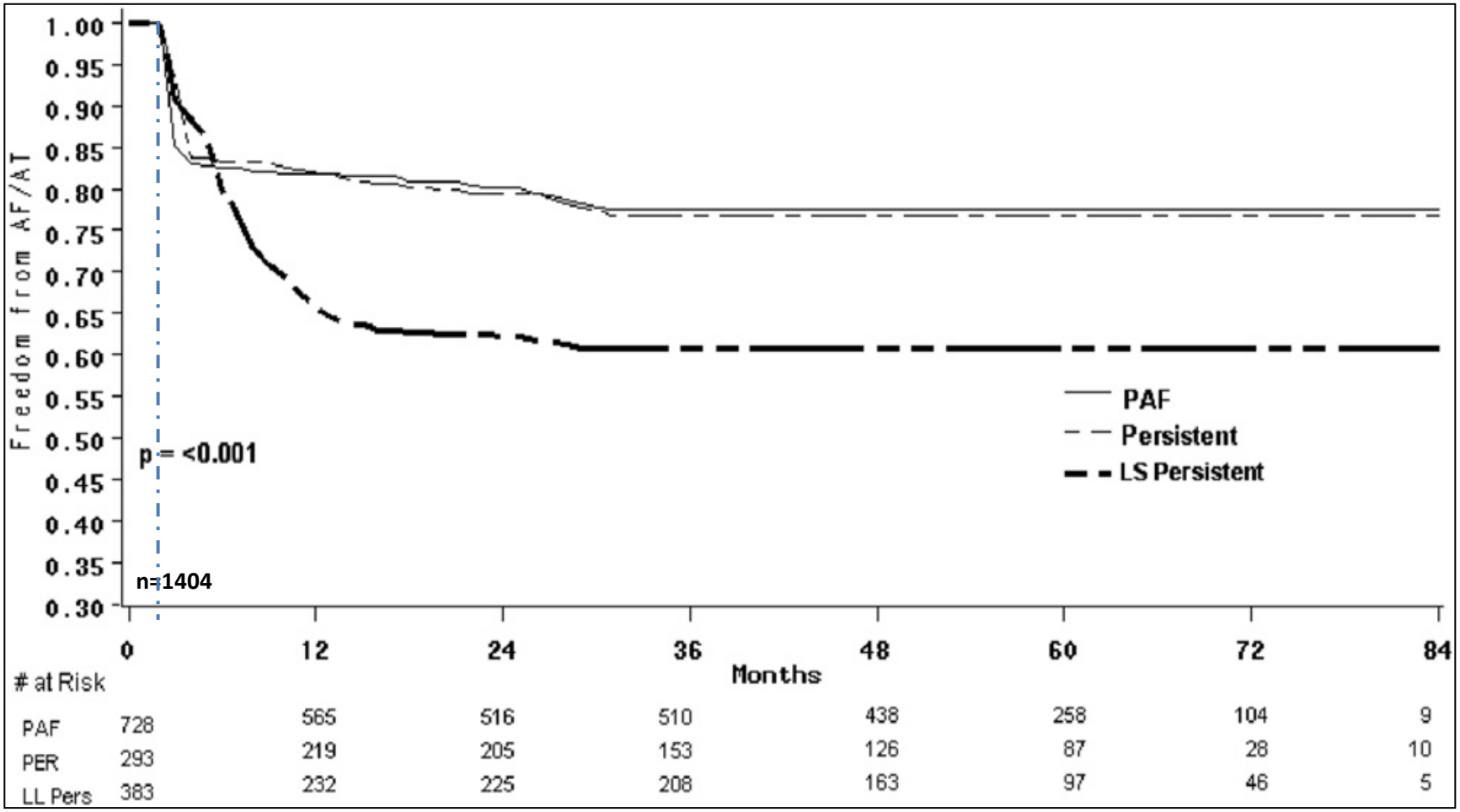
-higher amount of atrial fibrosis (DE-MRI) (*70±16 cm2 vs. 49±10 cm2, p=0.01*)

-more CFAE extent (*54±16 cm2 vs. 28±15 cm2, p=0.02*)

-shorter baseline AF CL (*147±10 ms vs. 182±14 ms, p=0.01*)

Jadidi, et al. JACC 2013

Impact of type of AF and repeat catheter ablation on long-term freedom from AF:
Results from a multicenter study



Bhargava, et al. Heart Rhythm 2009

RECURRENCE OF AT/AF FOLLOWING RF CATHETER ABLATION OF AF

Predictors of Late Recurrence in Those with Early Recurrence

Clinical
- Older age[17]
- Genetic factors (presence of 4q25 variants)[5]

AF History
- Persistent/permanent AF[7,18,17]
- Higher number of previously ineffective antiarrhythmic drugs[23]
- Symptomatic ERAT (especially if >6 hours duration)[20]
- Timing of ERAT (after the second month)[27]

Echocardiographic Parameters
- Left atrial enlargement[9,14,28]

Electrical Characteristics
- Increased P-wave dispersion[9]
- Lack of electrical remodeling (P max and P-wave dispersion)[26]

Procedural Variables
- Incomplete pulmonary vein isolation[15]
- No termination of AF or cardioversion required during index ablation procedure[14,15]
- Higher number of ablation lesions[23]
- Prolonged ablation and procedure time[23]
- Inducibility of AF or atrial tachyarrhythmia during index ablation procedure[23]
- Cavotricuspid isthmus ablation[23]
- Electrogram-based ablation[28]

Increase delayed enhancement MRI (fibrosis)

McCready, et al. Europace 2011
J. Andrade, et al. PACE 2012

AF ABLATION

1st ⇒ SELECT THE RIGHT PATIENT !

Type of AF

LA diameter

Fibrosis

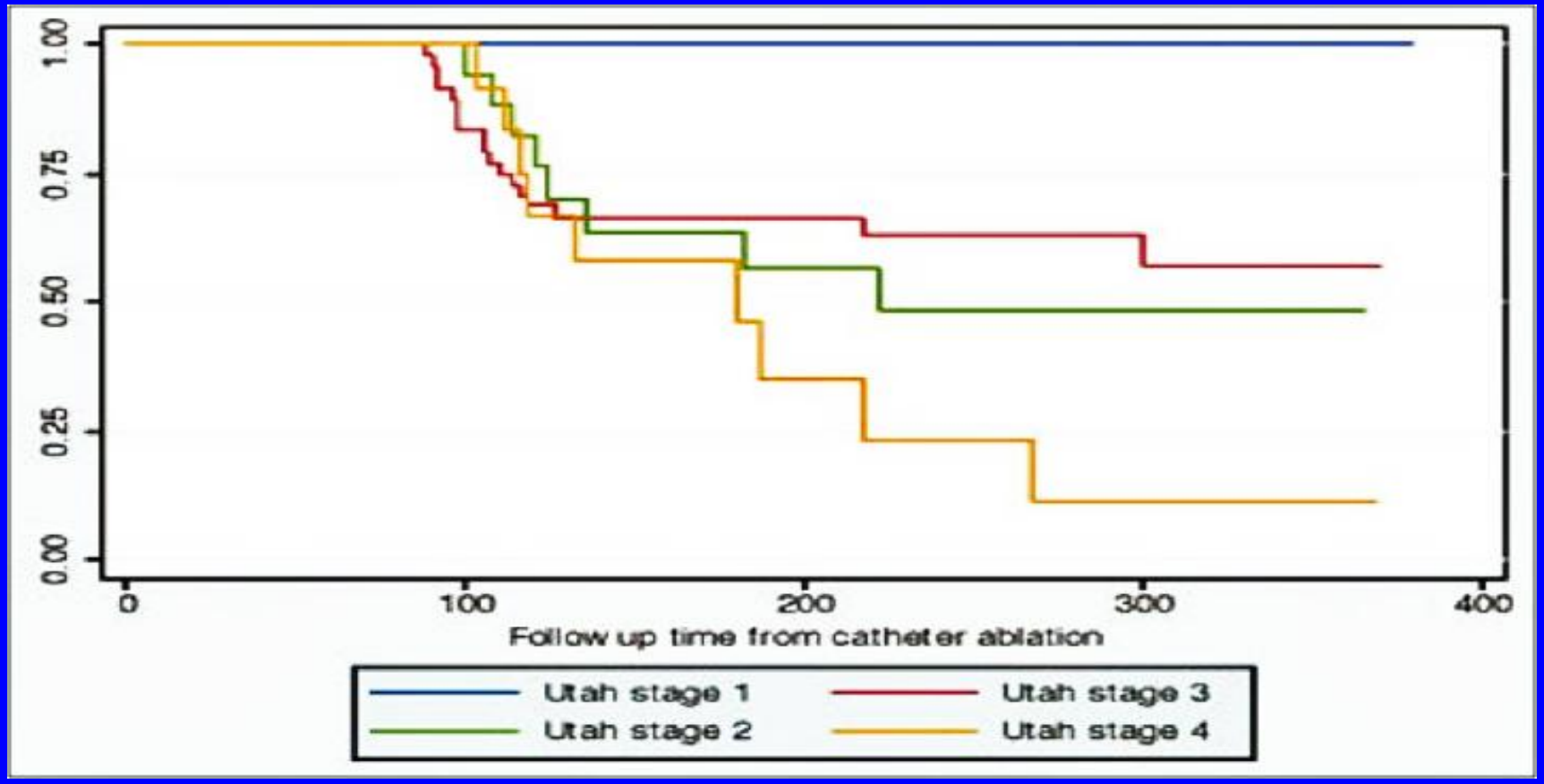
Co-morbidities

Age

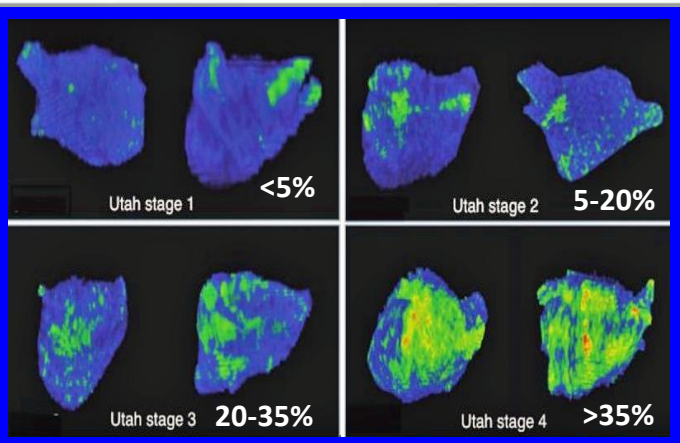
LVEF

2nd ⇒ DEFINE THE "BEST" STRATEGY !

Atrial Fibrosis Helps Select the Appropriate Patient and Strategy in Catheter Ablation of Atrial Fibrillation: A DE-MRI Guided Approach



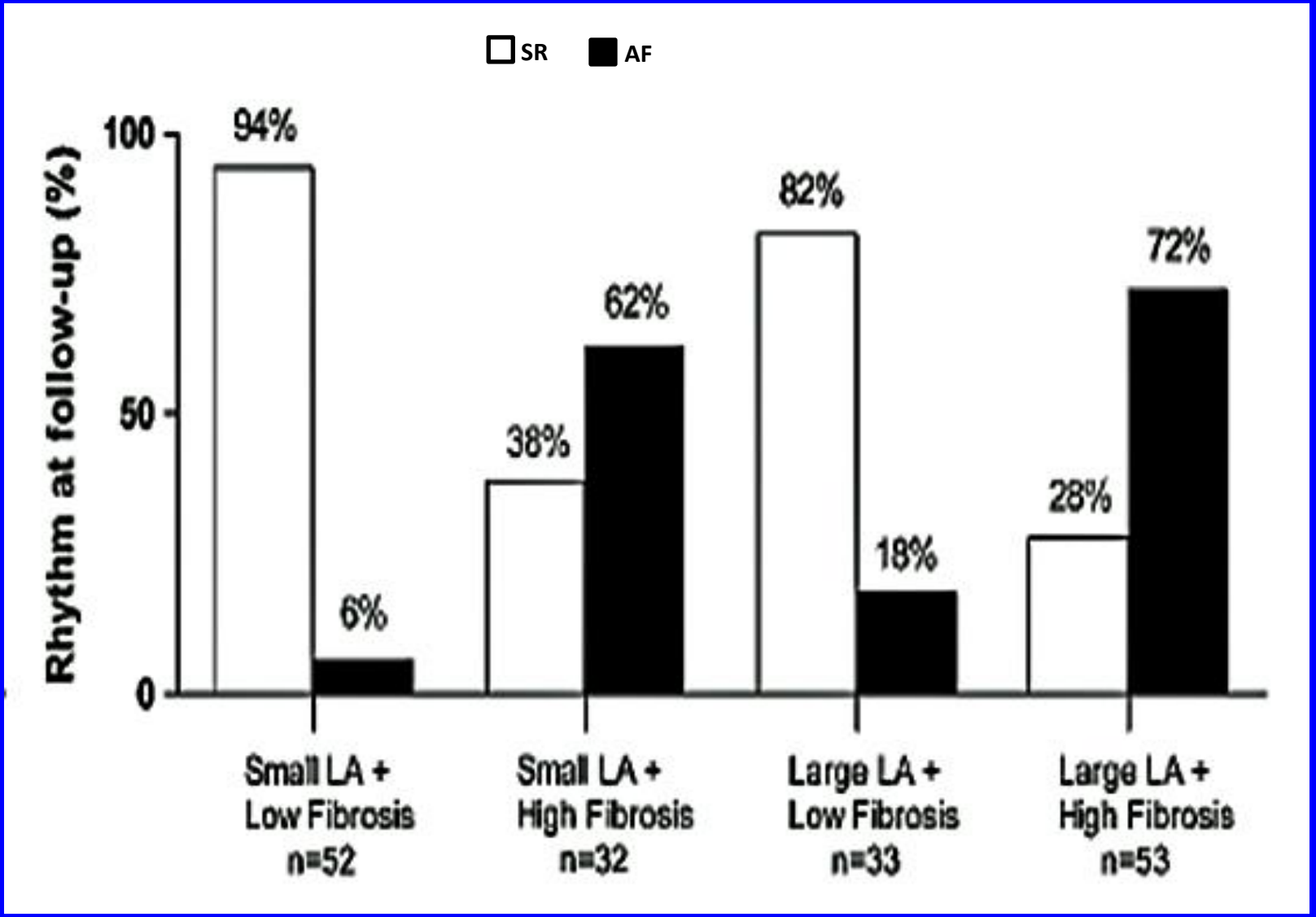
Nakoum et al, JCE 2012



Impact of left atrial fibrosis and left atrial size on the outcome of catheter ablation for atrial fibrillation

Uijl DW, et al. Heart 2011

n=174

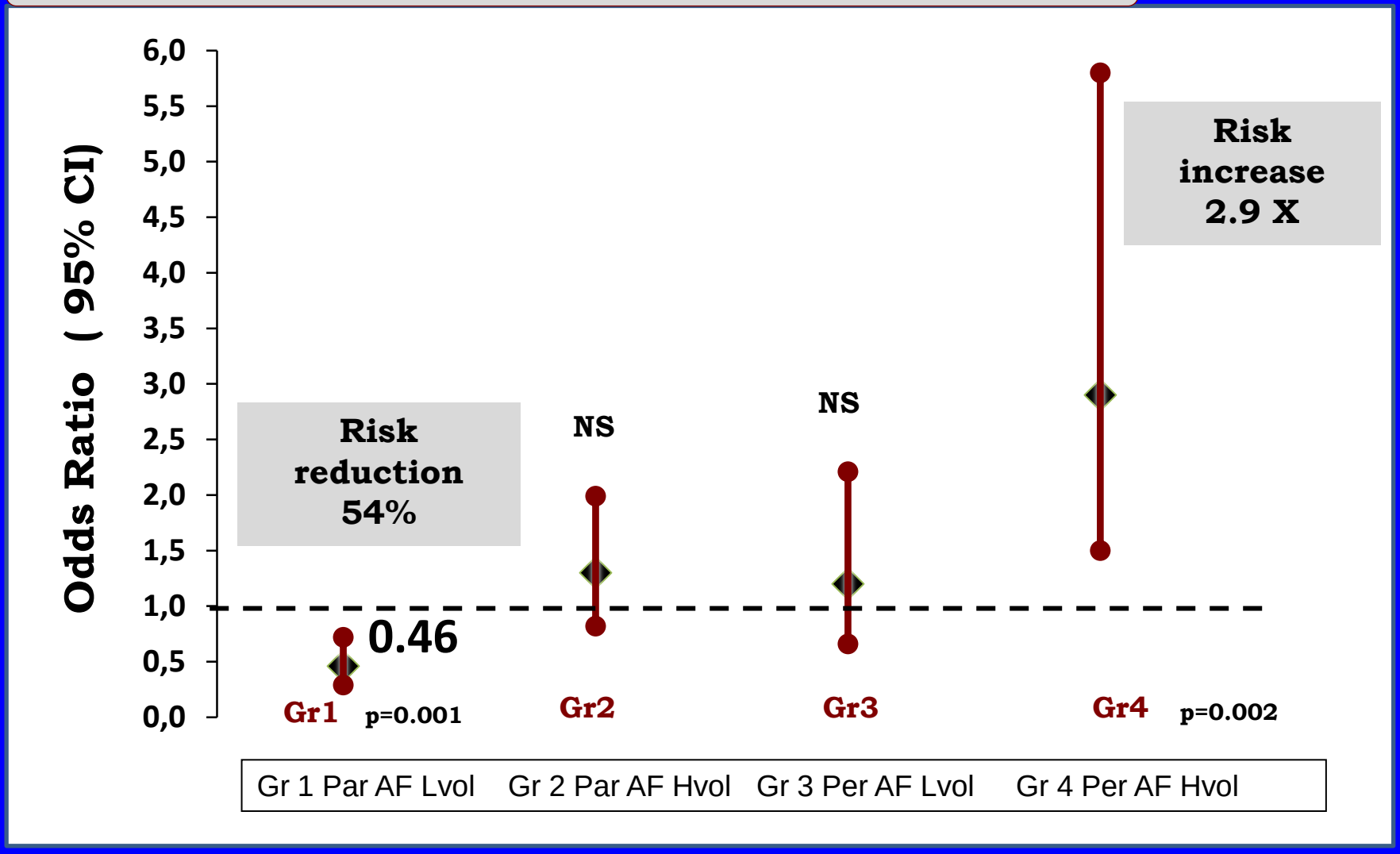


LA volume and AF type predict AF recurrence after catheter ablation

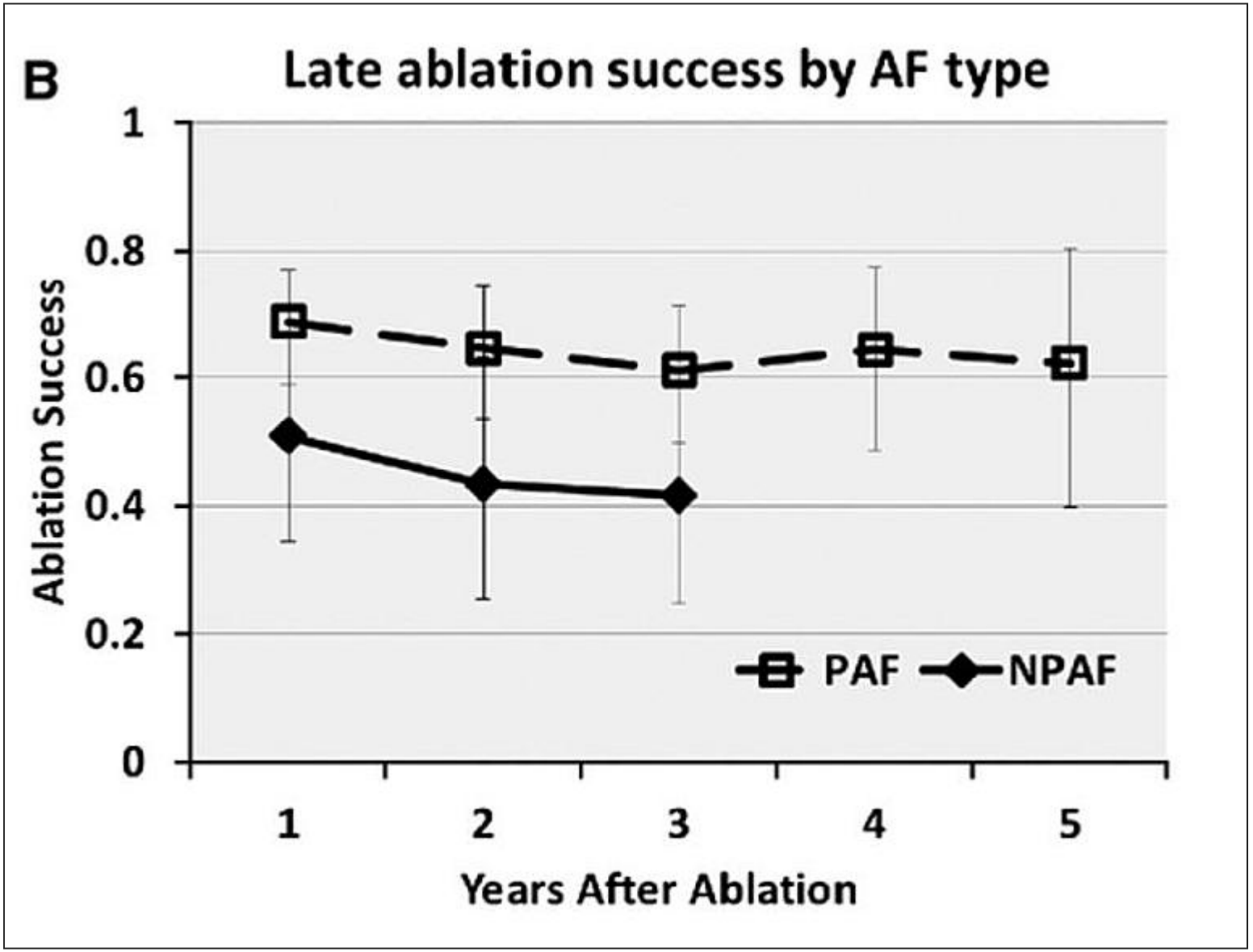
Adragão, et al (in press)

n=407

ADJUSTED RECURRENCE RISK OF ATRIAL FIBRILLATION FOR GROUPS



Long-term Outcomes of Catheter Ablation of Atrial Fibrillation: A Systematic Review and Meta-analysis



Ganesan, et al. JAHA 2013

Outcomes of long-standing persistent AF ablation: a systematic review

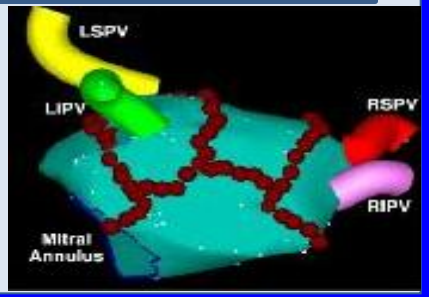
Brooks, et al; Heart Rhythm 2010

Author	N	Technique	Success			Complication rate (%)
			Single	Multiple	AAD	
Kanagaratna				—	0.62	5.6
Lim				0.37 (1.7)	0.45	3.9
Yamada				0.43 (1.5)	—	— TG
Pappone				—	0.68	
Cheema				0.54 (1.2)	—	9.8
Elayi[RCT2]				0.56 (1.3)	0.85	0.0
Oral[RCT3]				0.68 (1.4)	—	TG
Oral[RCT1]				—	—	0.0
Vasamreddy				—	0.70	TG
Oral				—	—	0.0
Elayi[RCT2]				0.17 (1.3)	0.28	0.0
Earley				0.74 (1.6)	—	11.9
Seow				0.54 (1.5)	0.86	7.1
Miyazaki				—	0.60*	0.0
Fiala				0.66 (1.5)	0.87	—
Sanders	27	BOX	0.44	0.63 (1.4)	—	7.4
Chen	10	BOX	0.50	0.60 (1.5)	—	— TG
Kumagai	24	BOX	0.42	0.46 (1.1)	0.88	TG
Nademanee	64	CFAE	0.63	0.77 (1.2)	—	TG
Oral[RCT1]	40	CFAE	0.33	—	—	0.0
Oral	100	CFAE	0.33	0.57 (1.5)	—	3.0
Oral[RCT4]	33	CFAE†	0.24	0.52 (1.4)	—	3.0
Oral[RCT4]	33	CFAE‡	0.30	0.58 (1.2)	—	0.0
Schmitt	30	PVI + CFAE	0.50	—	—	TG
Estner	35	PVI + CFAE	0.51	0.74	—	0.0
Li	92	PVAI + CFAE	0.58	—	—	5.4
Porter	25	PVAI + LIN + CFAE	0.68	—	—	4.0
Elayi[RCT2]	49	PVAI + CFAE	0.61	0.80 (1.2)	0.94	6.1
Oral[RCT3]	50	PVAI + CFAE	0.36	0.60 (1.4)		0.0
Haissaguerre	60	STEPWISE	0.62	0.88 (1.5)	—	5.0
Sacher	43	STEPWISE	—	0.70 (1.4)	0.84	—
Takahashi	40	STEPWISE	0.55	0.83 (1.4)	0.90	2.5
Rostock	88	STEPWISE	0.38	0.81 (1.8)	—	3.2
O'Neill	153	STEPWISE	0.48	0.74 (1.5)	0.89	3.9

A 1 Per 1,000 Mortality Rate After Catheter Ablation of Atrial Fibrillation

An Acceptable Risk?*

- substrate (and procedure) more complex
- often accompanied by significant comorbidities
- fewer patients with complete success
- > pts need a second (and third…) ablation



Arritmias tratadas sem intervenção das mãos

A ablação, seja computorizada ou tradicional, é elegível para cerca de 50% dos doentes, excepto aqueles que "têm as aurículas dilatadas, que não têm um bom estado geral de saúde ou que já estão em fibrilhação auricular há vários anos"

Pedro Adragão, In Diário de Notícias, 23/Abril/2009

Clinical outcome of ablation for long-standing persistent atrial fibrillation with or without defragmentation

Complete defragmentation (CFAE, sites with a significant electrogram offset suggesting a local re-entrant wavefront, regions with a shorter CL) using Stereotaxis Magnetic Navigation is associated with a higher number of minor complications and longer procedure times, and thus compromises efficiency without improving efficacy.

L. De Vries, et al. Neth Heart J. 2014 January

"… se não fizermos nada no início já não vamos conseguir obter resultados. Já vai tarde demais…" Pedro Adragão, 3º Curso de Revisão e Atualização em Medicina Cardiovascular, 1/Fev./2014

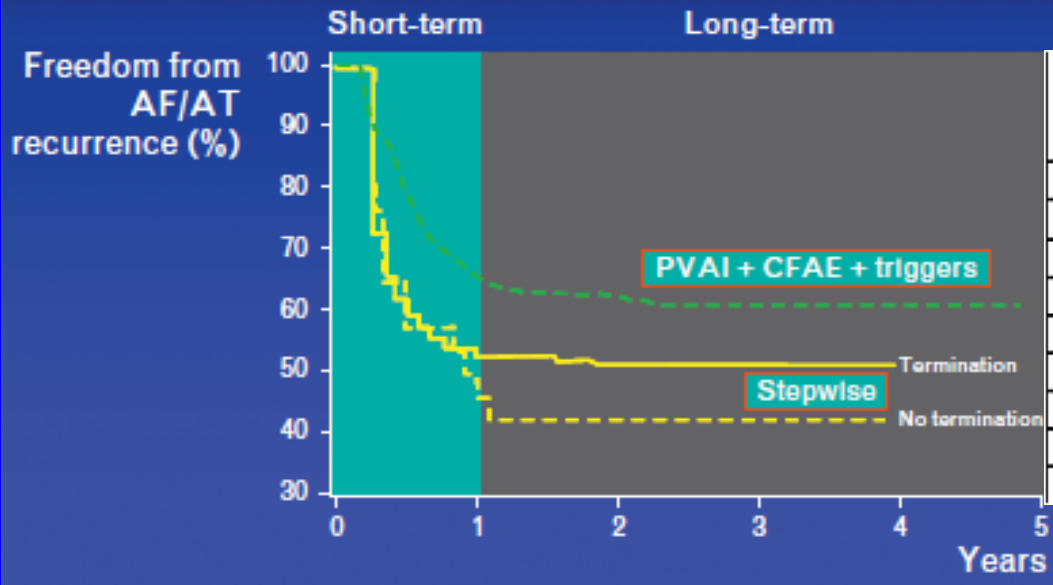
Na FA persistente, para além do **isolamento das VP**, podem ser aplicadas lesões adicionais para eliminar **focos trigger extra-VP** ou para criar **linhas no teto e parede posterior da AE, SIA, istmo mitral ou zona de transição VP-AAE**. A identificação e abolição de potenciais fracionados auriculares complexos (**CFAE**) têm permitido melhorar resultados segundo alguns autores. Também o reconhecimento do papel do SNA nos mecanismos da FA tem levado ao desenvolvimento de técnicas para localização dos **gânglios autonómicos cardíacos** por estimulação neurofisiológica e sua ablação específica.

Oliveira M.Rev Port Cardiol 2009

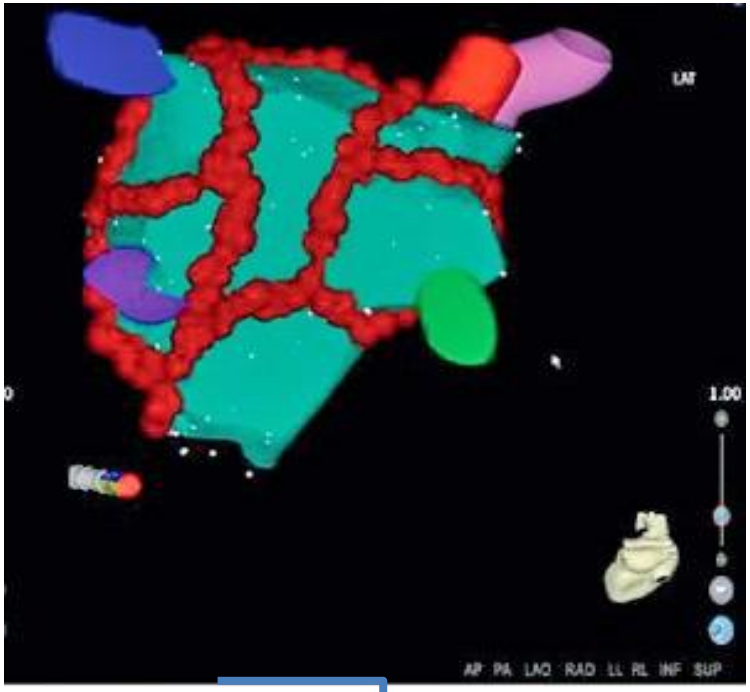
Catheter Ablation for the treatment of AF

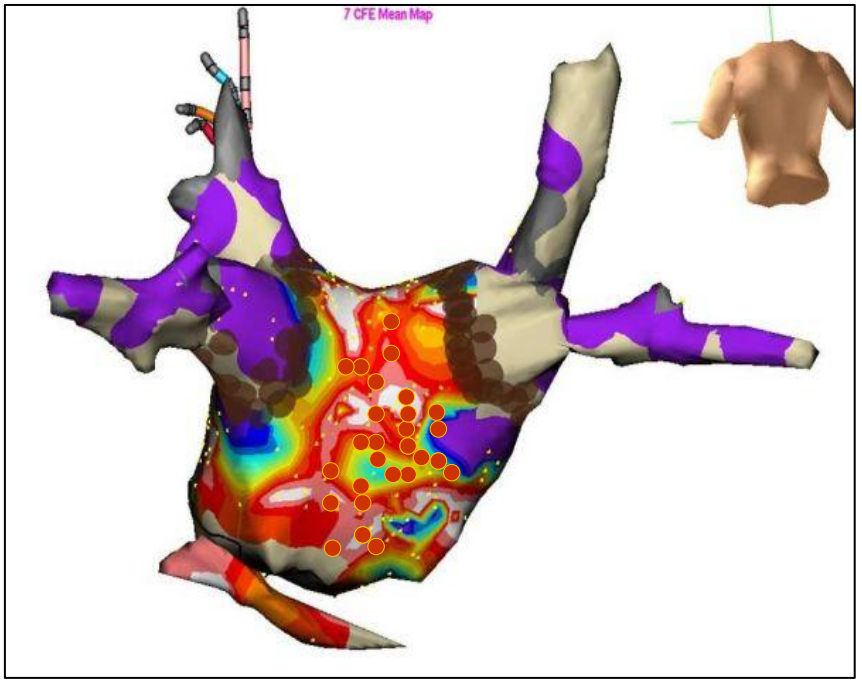
Maze reproduction	Schwarz 1994
Right atrial linear lesions	Haïssaguerre 1994
Right and left atrial linear lesions	Haïssaguerre 1996
PV foci ablation	**Jaïs / Haïssaguerre 1998**
Ostial PV isolation	Haïssaguerre 2000
Circumferential PV ablation (CPVA)	Pappone 2000
	Lin 2003
	Maroucche / Natale 2004
	Ouyang / Kuck 2004
	CC Chou, 2011

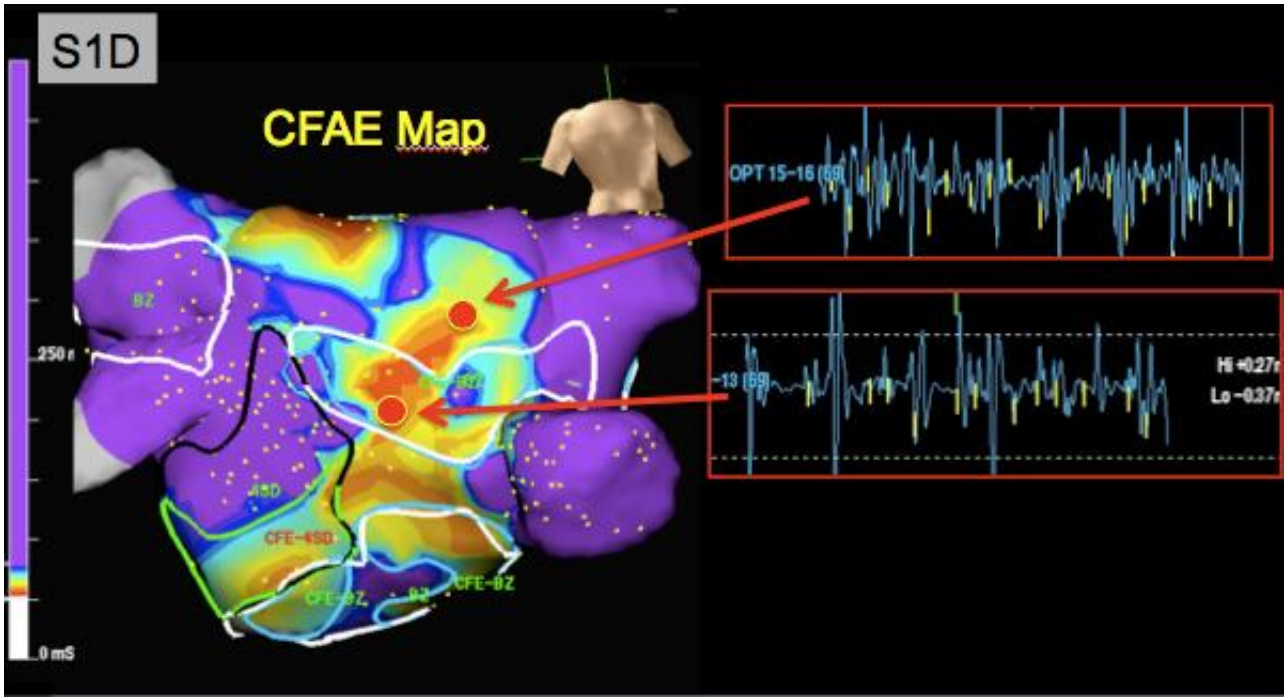
Long-standing persistent AF ablation outcomes
Short- and long-term success



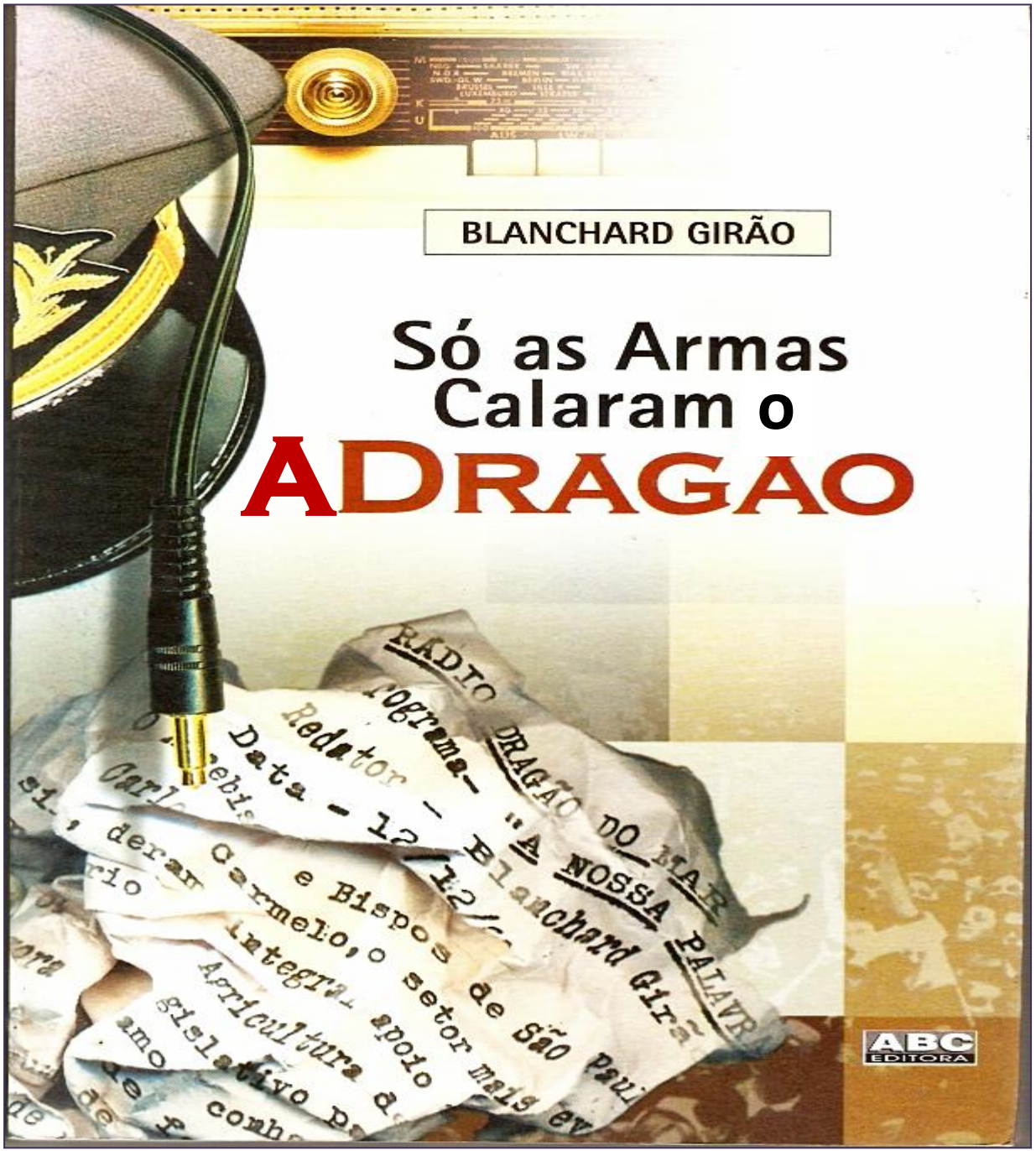
Ablation site	Power (Watts)	Usual total duration of radiofrequency delivery (mins)
Coronary Sinus	15 -25	4-8
Posterior wall LA	25 - 30	3-6
Anterior wall LA	30 - 35	3-6
Inferior LA	30 - 40	5-10
Roof LA	25 - 30	10-15
PVs	30	25-40
Septum LA	30	3-6
Right atrium	20 - 35	0-20
Mitral Isthmus	30 - 35	10-20


LAT
1.00
AP PA LAO RAO LL RL INF SUP


7 CFE Mean Map


S1D
CFAE Map
OPT 15-16 (69)
-13 (69)
Hi +0.27
Lo -0.37
250
0 mS
BZ
ASD
CFE-ASD
CFE-BZ

too much tools may be useless!...


BLANCHARD GIRÃO
Só as Armas Calaram o
ADRAGAO
RADIO DRAGÃO DO MAR
Programa
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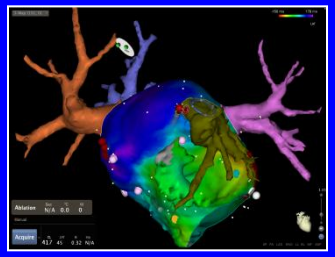
Data - 12
"A NOSSA PALAVR
Blanchard Gir
e Bispos de São Pau
Carmelo, o setor mais ev
integra
apoio
Agricultura
ABC
EDITORA

AF Ablation in Portugal
~25% of all ablations

600
500
400
300
200
100
0

2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012

Melo JQ, Adragão P, et al. Cirurgia da fibrilhação auricular utilizando radiofrequência intra-operatória Rev Port Cardiol 1998



... AF prevalence in the population with >40 years-old is 2,5%.

FAMA, RPC 2010

Catheter ablation for paroxysmal and persistent atrial fibrillation

Chen HS, et al. Cochrane Database Syst Rev 2012

- **Primary objective**:
  to assess the beneficial and harmful effects of catheter ablation in comparison with medical treatment in pts with paroxysmal and persistent AF.
- **Secondary objective**:
  to determine the best regimen of ablation.

32 RCT; 3560 patients

There is limited evidence to suggest that catheter ablation may be a better treatment option compared to medical therapies in the management of persistent AF.

This review was also unable to recommend the best ablation method.

O TRATAMENTO ABLATIVO DA FA PERSISTENTE DE LONGA-DURAÇÃO CONSTITUI UM IMPORTANTE DESAFIO. A EFICÁCIA DESTA ABLAÇÃO DEPENDERÁ DA IDENTIFICAÇÃO/LOCALIZAÇÃO DOS MECANISMOS COMPLEXOS QUE REPRESENTAM O SUBSTRATO ARRÍTMICO CAPAZ DE MANTER A ARRITMIA E SUA ELIMINAÇÃO/MODIFICAÇÃO COM SEGURANÇA.

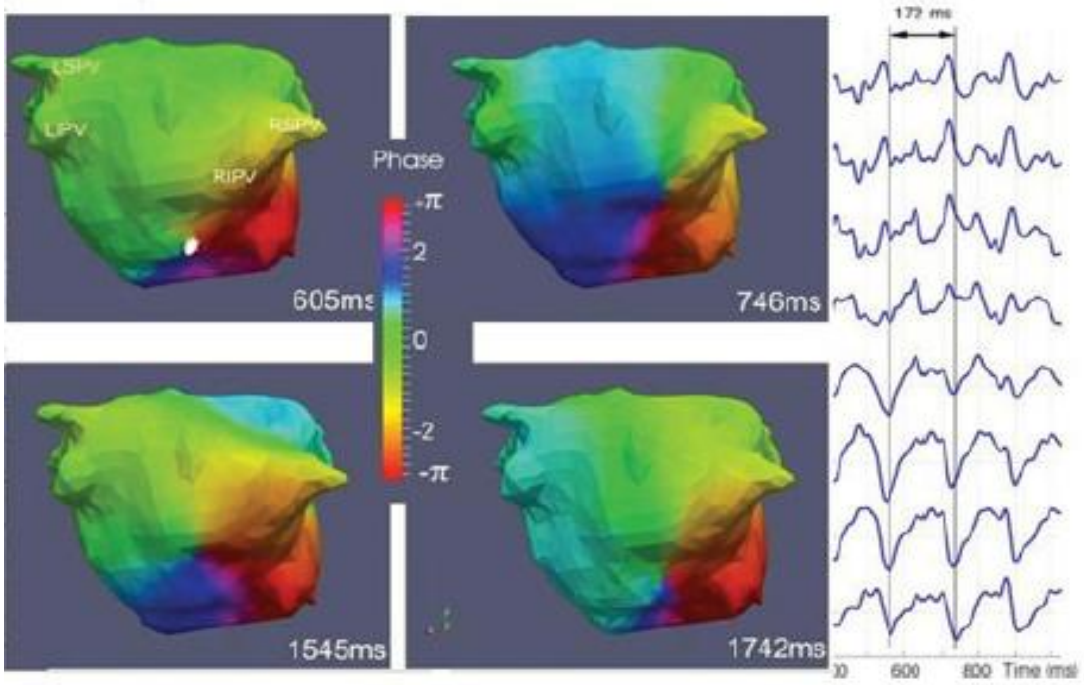
Mapeamento Electrocardiográfico Não Invasivo

ecVUE
noninvasive dynamic mapping in a beat

cardioInsight
noninvasive dynamic mapping in a beat

FA persistente »»»

(rotor porção inferior parede posterior AE)



M. Haissaguerre et al;
J Cardiovasc Electrophysiol, 2013

"Both Prof. Adragao and Prof. Oliveira are noted as National Coordinators for Atrial Fibrillation Ablation LongTerm Registry for Portugal."

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