Faut-il faire plus que les veines pulmonaires en cas d'ablation de FA?

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Liens d’intérêt

- Consultant:
  - Johnson & Johnson, Medtronic, Abbott, Boston Scientific, MicroPort

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Recommendations for rhythm control/catheter ablation of AF (5)

ESC European Society of Cardiology

Recommendations	Class	Level
Techniques and technologies		
Complete electrical isolation of the pulmonary veins is recommended during all AF catheter-ablation procedures.	I	A
If patient has history of CTI-dependent AFL or if typical AFL is induced at the time of AF ablation, delivery of a CTI lesion may be considered.	IIb	B
Use of additional ablation lesions beyond PVI (low voltage areas, lines, fragmented activity, ectopic foci, rotors, and others) may be considered but is not well established.	IIb	B

2020 ESC Guidelines for the diagnosis and management of atrial fibrillation (European Heart Journal 2020-doi/10.1093/eurheartj/ehaa612)

L’ablation par radiofréquence / 3D

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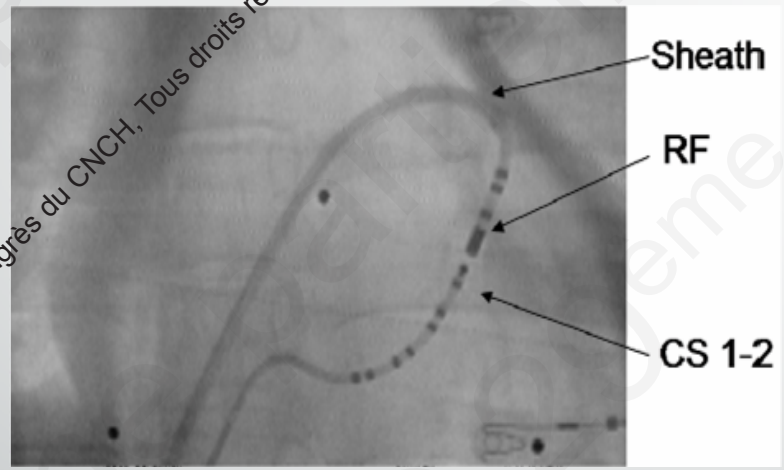
La cryoablation

L’électroporation

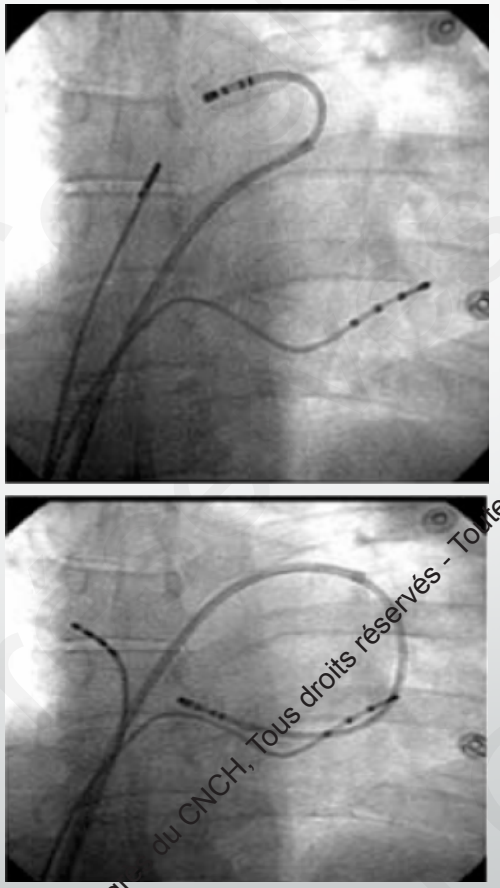
Création de lignes d'ablation additionnelles

Ligne mitrale



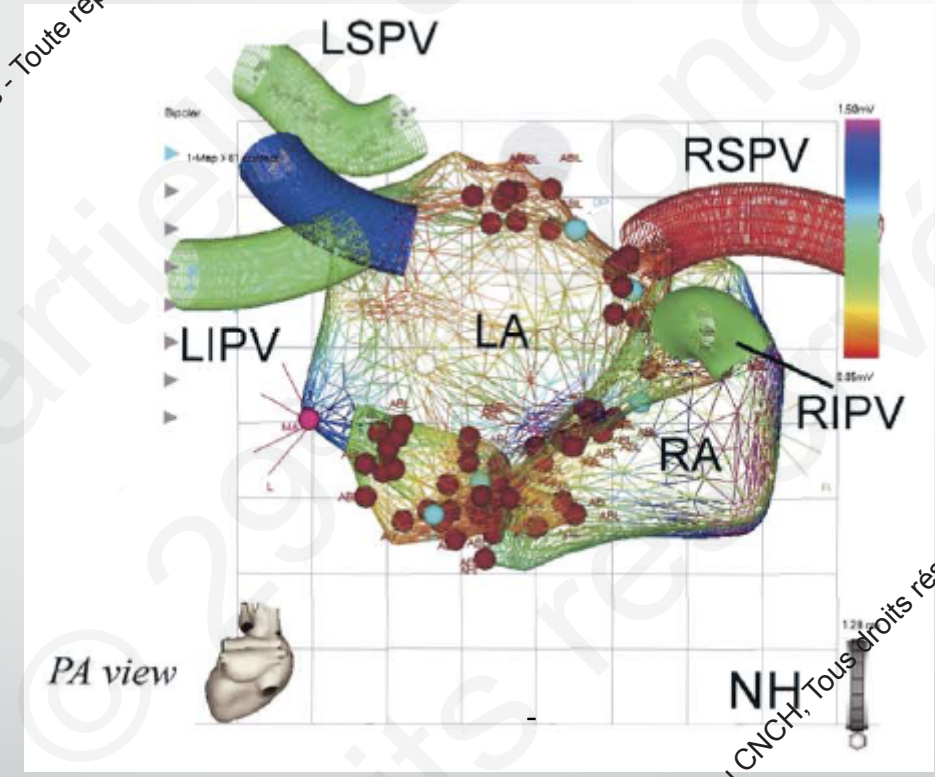
Jaïs P. et al. Circulation 2004; 110: 2996-3002

Ligne du toit et du SC



Haïssaguerre M. et al. J C E 2005; 16: 1125-37

Recherche de potentiels fragmentés



- arrêt de la FA 95%
- 91% RS à 1 an

Nademanee K. J Am Coll Cardiol 2004; 43: 2044-53

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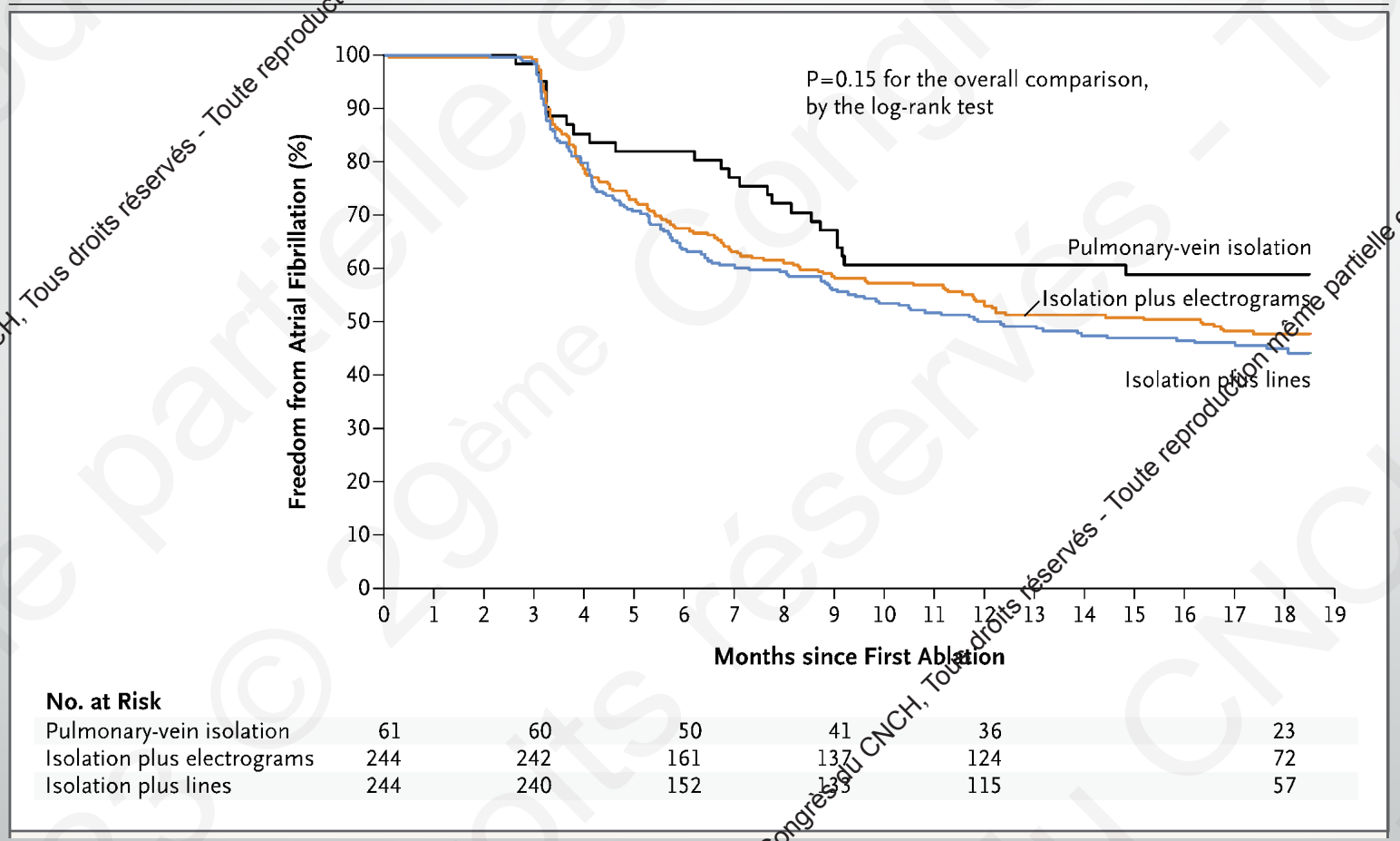
STAR AF II

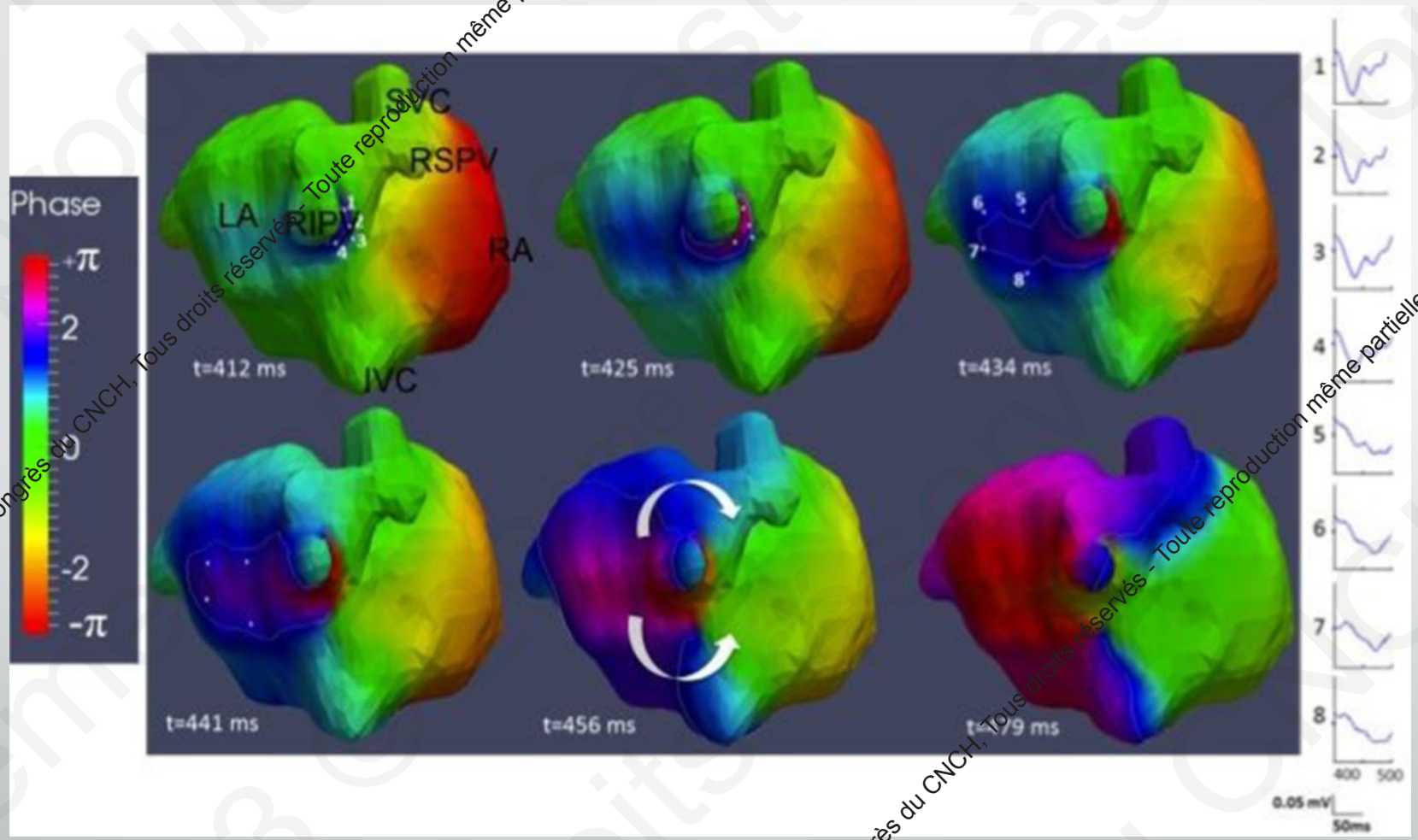


No. at Risk

Pulmonary-vein isolation	61	60	50	41	36	23
Isolation plus electrograms	244	242	161	137	124	72
Isolation plus lines	244	240	152	133	115	57

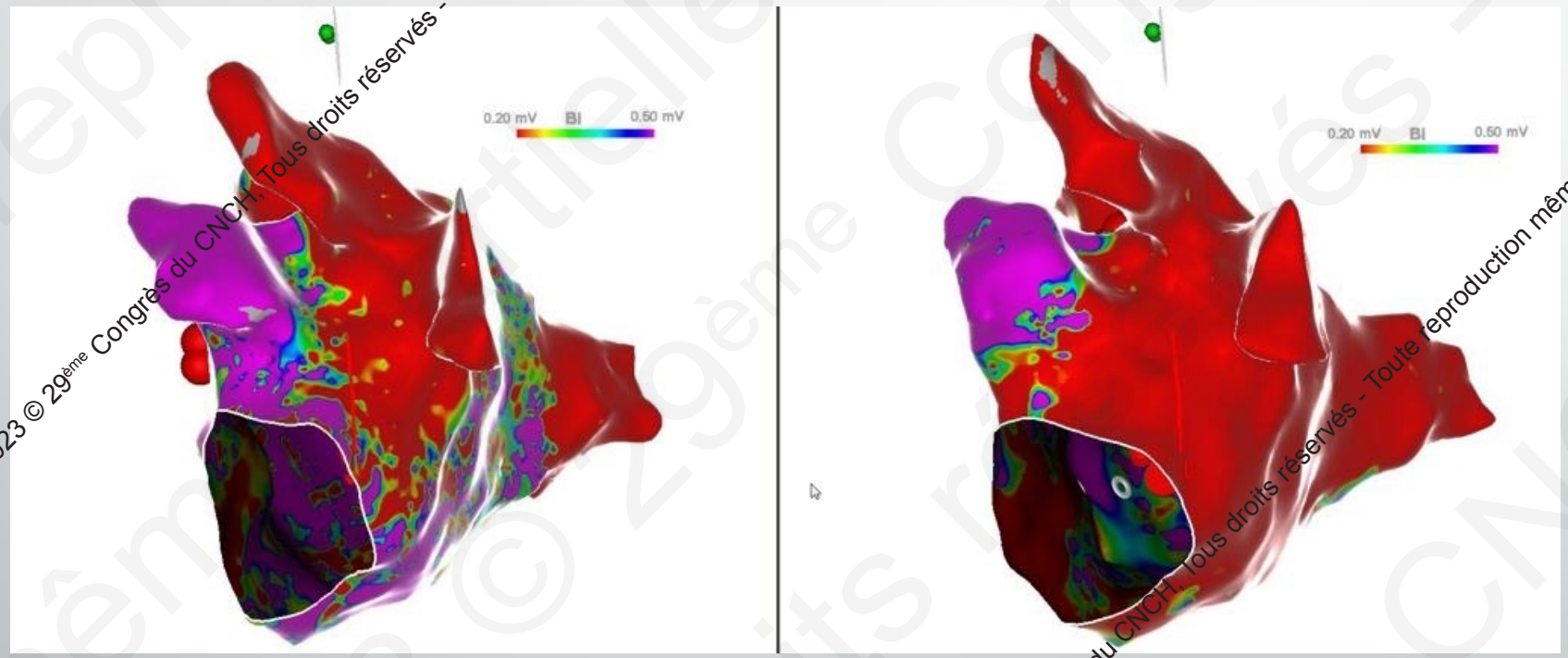
Verma et al. nejm 2015

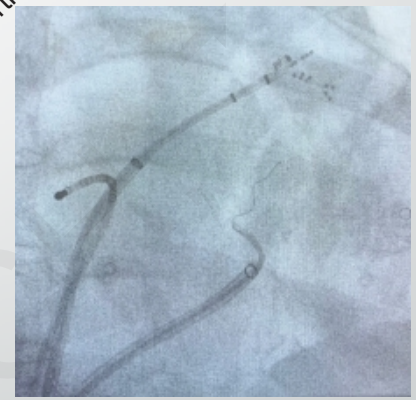
The phase map shows a focal source that emanates an impulse from the RIPV and initiates a couple (figure of 8) of reentrant drivers.



Haissaguerre M et al. Circulation. 2014;130:530-538

Alcoolisation de la veine de Marshall



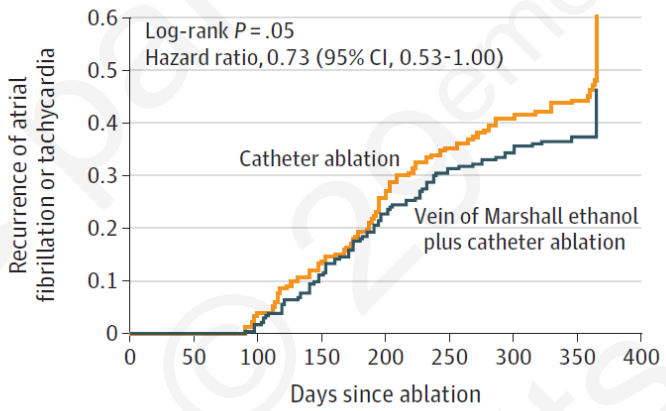


Effect of Catheter Ablation With Vein of Marshall Ethanol Infusion vs Catheter Ablation Alone on Persistent Atrial Fibrillation
The VENUS Randomized Clinical Trial

Miguel Valderrábano, MD; Leif E. Peterson, PhD; Vijay Swarup, MD; Paul A. Schurmann, MD; Akash Makkar, MD; Rahul N. Doshi, MD; David DeLurgio, MD; Charles A. Athill, MD; Kenneth A. Ellenbogen, MD; Andrea Natale, MD; Jayanthi Koneru, MD; Amish S. Dave, MD, PhD; Irakli Giorgberidze, MD; Hamid Afshar, MD; Michelle L. Guthrie, RN; Raquel Bunge, RN; Carlos A. Morillo, MD; Neal S. Kleiman, MD

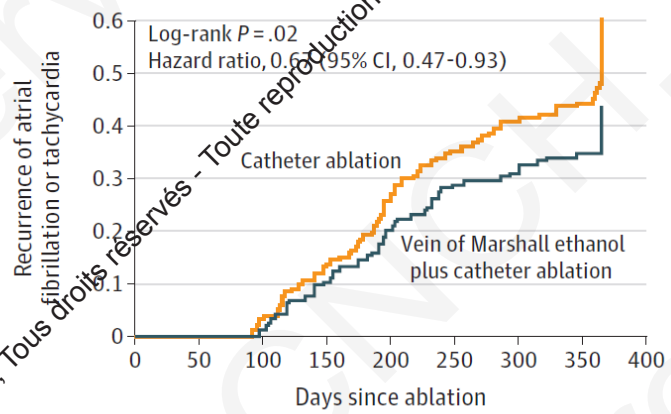
Figure 2. Time to Recurrence of Atrial Fibrillation or Tachycardia and Atrial Fibrillation Burden

A Atrial fibrillation or tachycardia occurrence after single procedure in as-randomized analysis



No. at risk									
Vein of Marshall ethanol plus catheter ablation	185	180	174	153	129	116	108	89	68
Catheter ablation	158	157	148	132	110	95	86	69	54

B Atrial fibrillation or tachycardia occurrence after single procedure in as-treated analysis

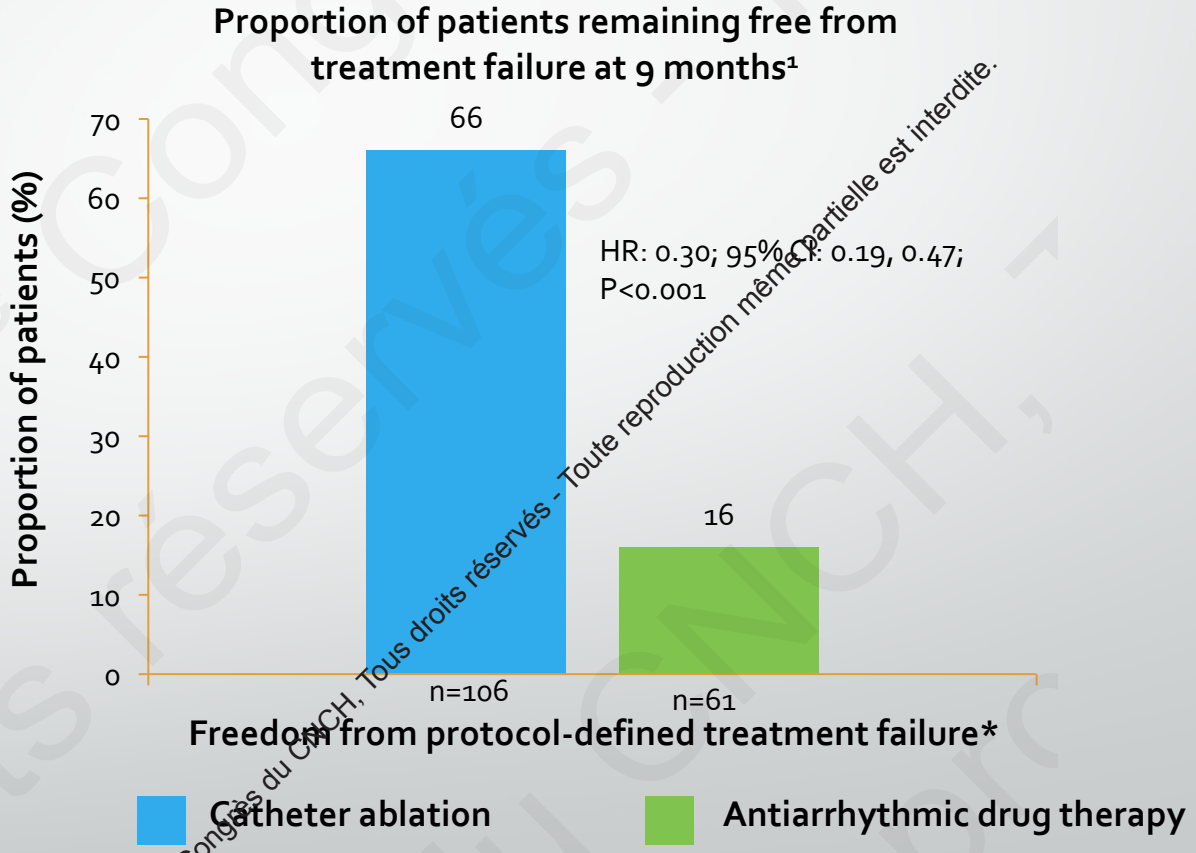


No. at risk									
Vein of Marshall ethanol plus catheter ablation	155	151	145	129	111	100	95	77	58
Catheter ablation	158	157	148	132	110	95	86	69	54

Attention aux flutter Gauches !

AF IDE trial
L'ablation par cathéter maintient le RS

- **Pts with PAF and not responding to >1 antiarrhythmic drug therapy**
- **Pts were followed for a 9-month effectiveness evaluation period after a 3-month blanking period**

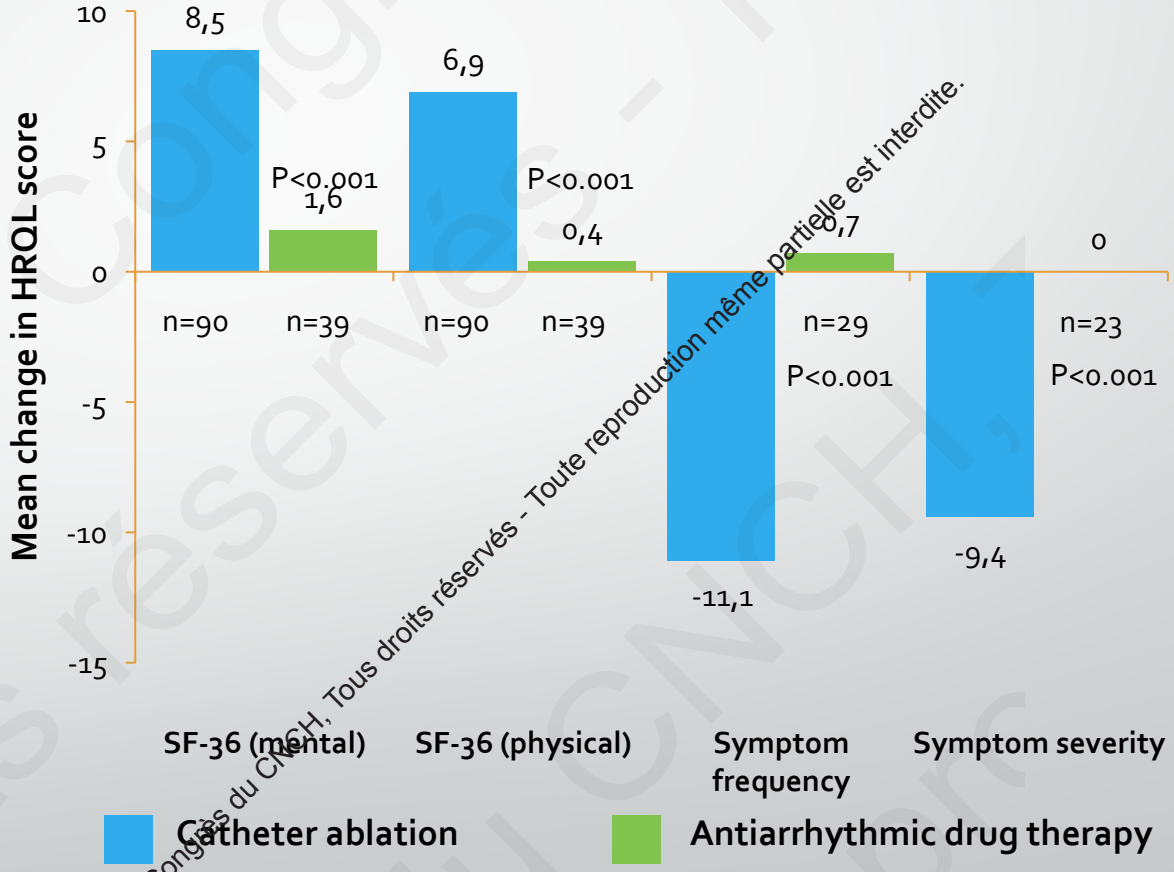


1. Wilber DJ et al. *JAMA* 2010;303:333-40

… et améliore la qualité de vie !

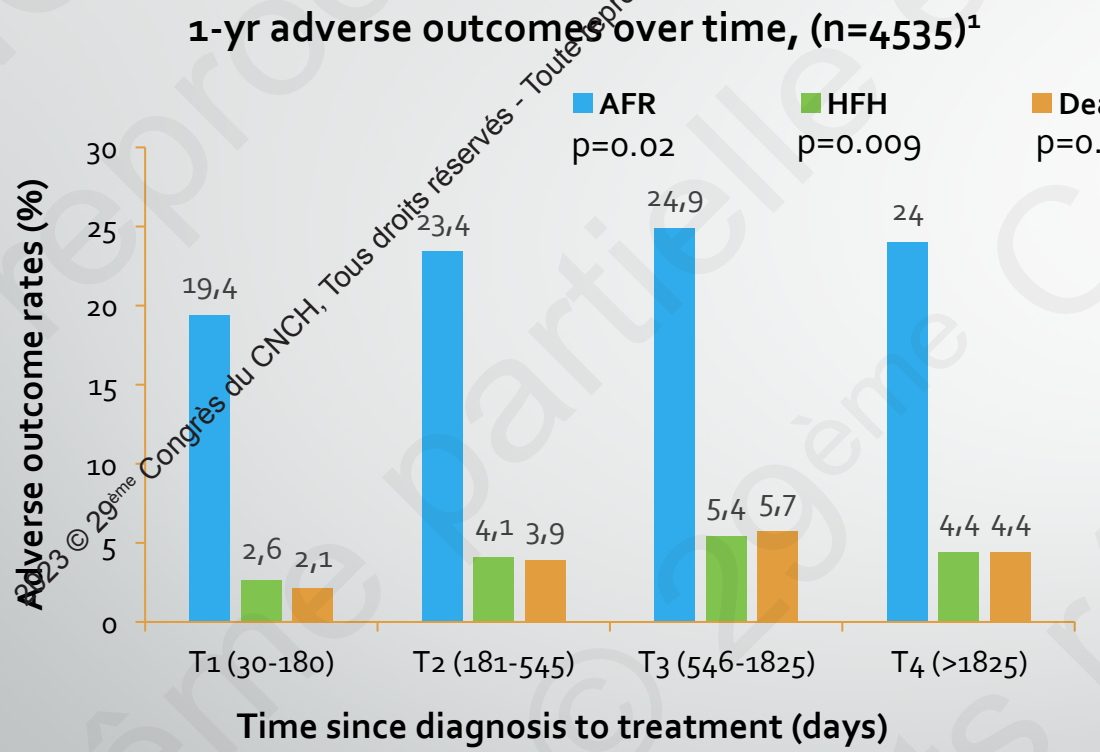
- **Following the 3-month effectiveness evaluation period, patients in the catheter ablation group experienced clinically meaningful improvement in symptoms and QoL compared with the ADT group**

Quality of life (QoL) assessment with change from baseline to 3 months[1]



1. Wilber DJ et al. *JAMA* 2010;303:333-40

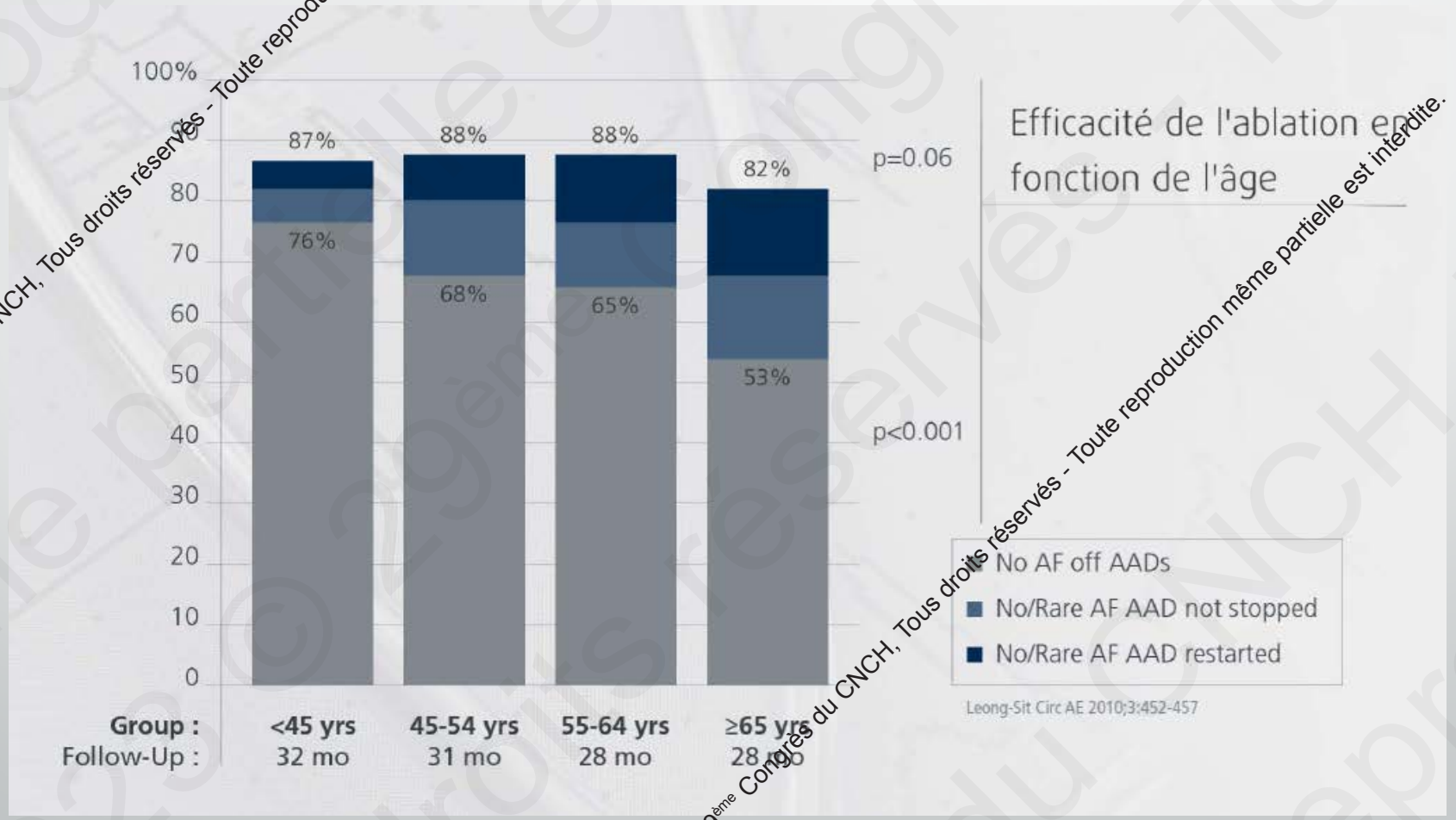
L'ablation est plus efficace si réalisée précocement



- **Delays in treatment with catheter ablation negatively impact on success rates and pt outcomes[1,2]**

1. Bunch TJ et al. *Heart Rhythm* 2013;10:1257-62.
2. Winkle RA et al. *Europace* 2012;14:646-52

L’ablation est plus efficace chez les pts jeunes



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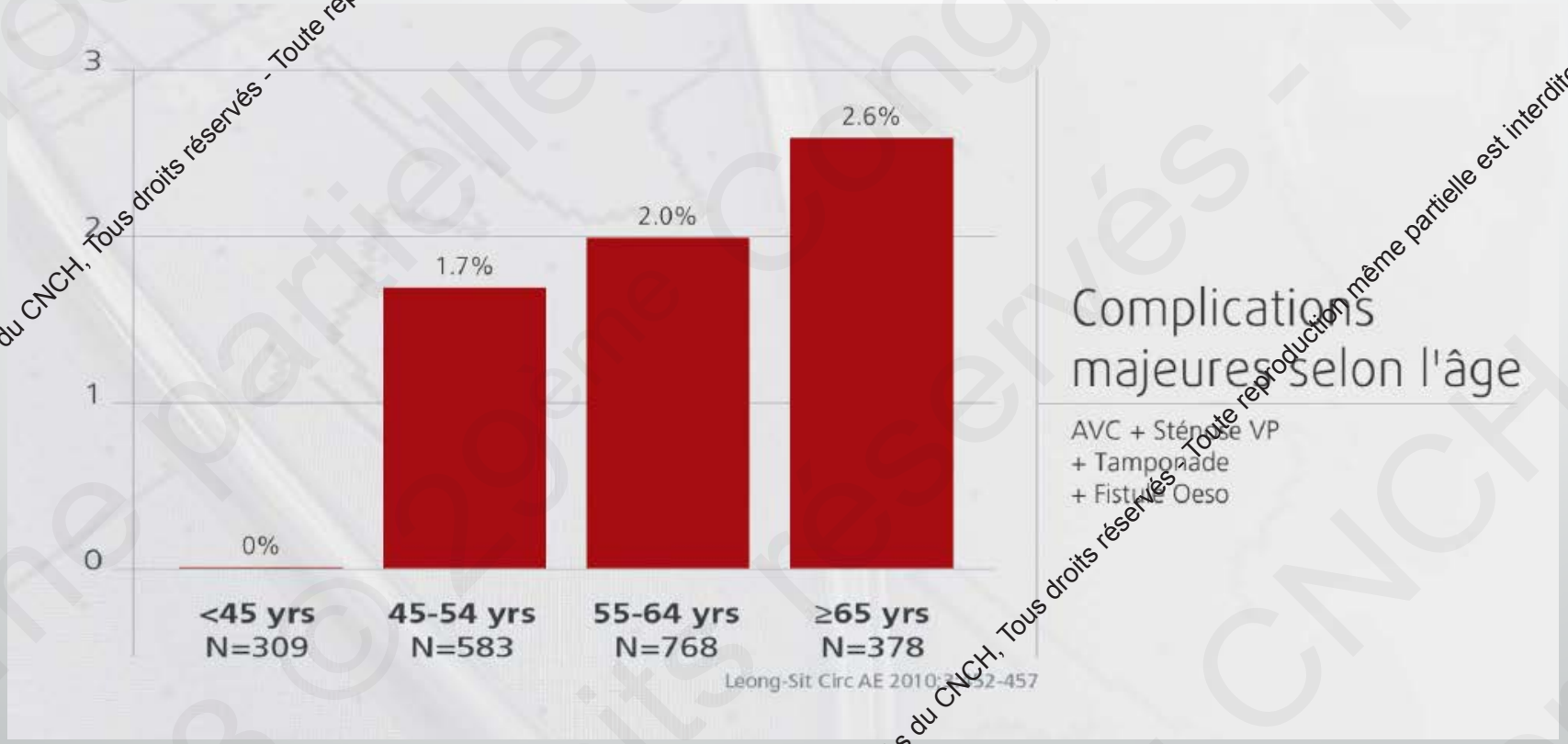
Moins de complications de l'ablation chez les jeunes



Les études cliniques randomisées RF vs. antiarythmiques ou aucun traitement

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
Khaykaphong *et al.* 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 *et al.* 2005 (RAAFT)	134	70	53 ± 8 (ablation) 54 ± 8 (AAD)	Mainly paroxysmal	No	PVI	12%[b]	49%[c]	87%	37%
Stabile *et al.* 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 *et al.* 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 *et al.* 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 *et al.* 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 *et al.* 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 *et al.* 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 90 days after 1st procedure[i]	59%[c]	66%	16%
Packer *et al.* 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%

ESC guidelines 2010

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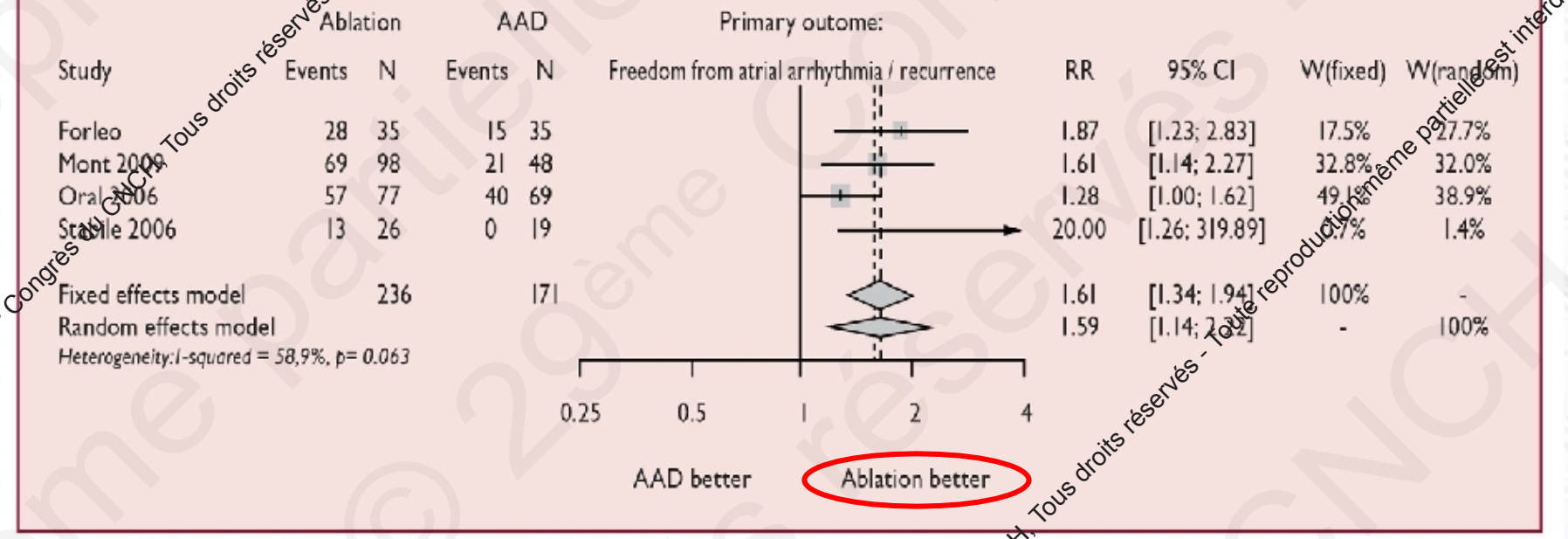
Rhythm outcome after catheter ablation compared to cardioversion and AAD in patients with persistent or long-standing persistent atrial fibrillation

Freedom from recurrence of atrial fibrillation or atrial arrhythmias, comparing catheter ablation with antiarrhythmic drug therapy in patients with persistent or long-standing persistent atrial fibrillation

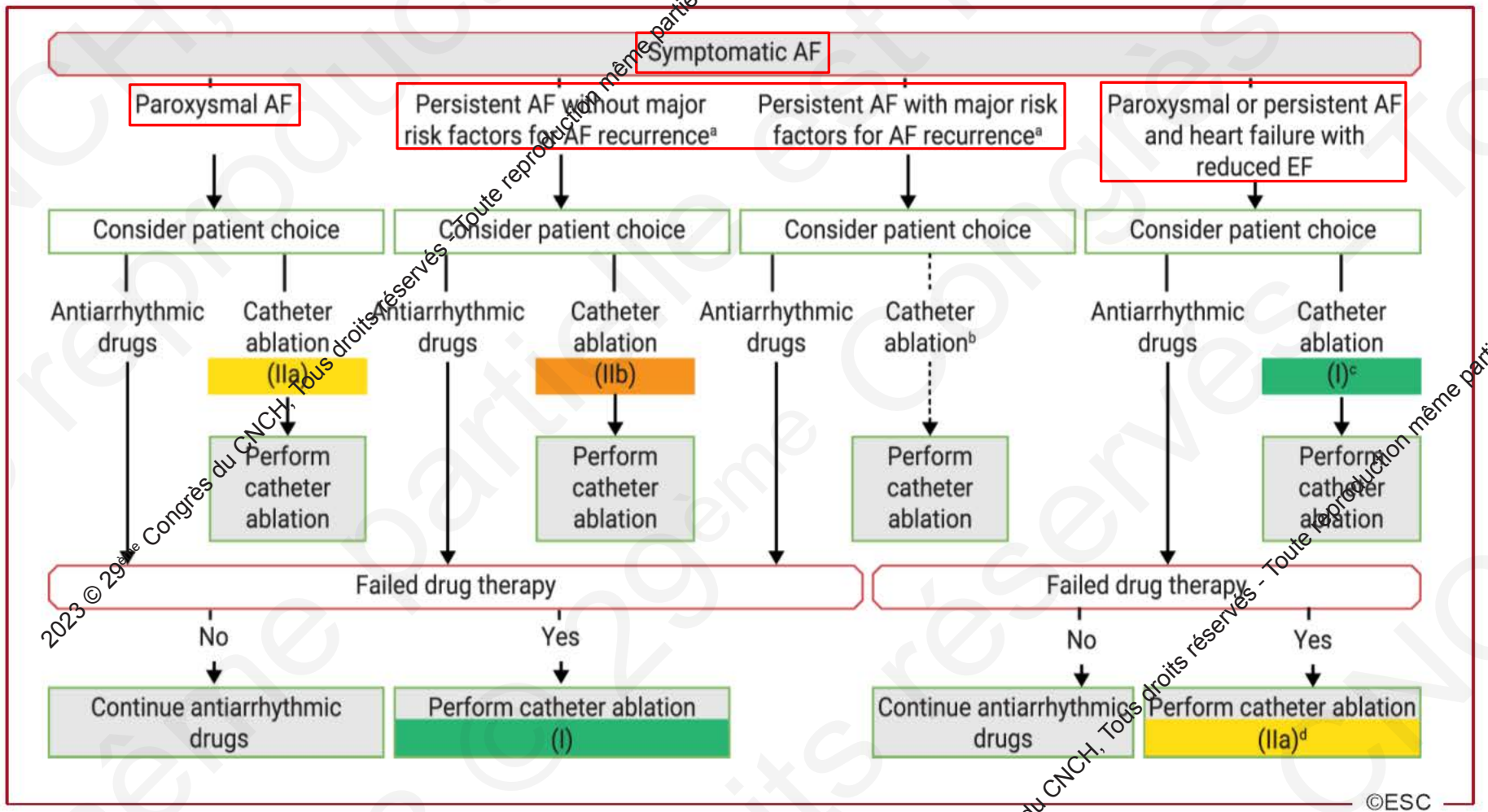


AAD = antiarrhythmic drug therapy; CI = confidence interval; N = number of patients; RR = risk ratio; W = study weighting.

ESC guidelines 2010

European Heart Journal - doi:10.1093/eurheartj/ehw210

Figure 17 Indications for catheter ablation of symptomatic AF



[a]Significantly enlarged LA volume, advanced age, long AF duration, renal dysfunction, and other cardiovascular risk factors. [b]In rare individual circumstances, catheter ablation may be carefully considered as first-line therapy. [c]Recommended to reverse LV dysfunction when tachycardiomyopathy is highly probable. [d]To improve survival and reduce hospitalization.

2020 ESC Guidelines for the diagnosis and management of atrial fibrillation
(European Heart Journal 2020-doi/10.1093/eurheartj/ehaa612)

Cas clinique ce matin

- Patient de 65 ans, FA symptomatique
- HTA, DNID, SAS, obésité
- Longue histoire de FA parox devenue persistante depuis environ 1 an
- OG peu dilatée

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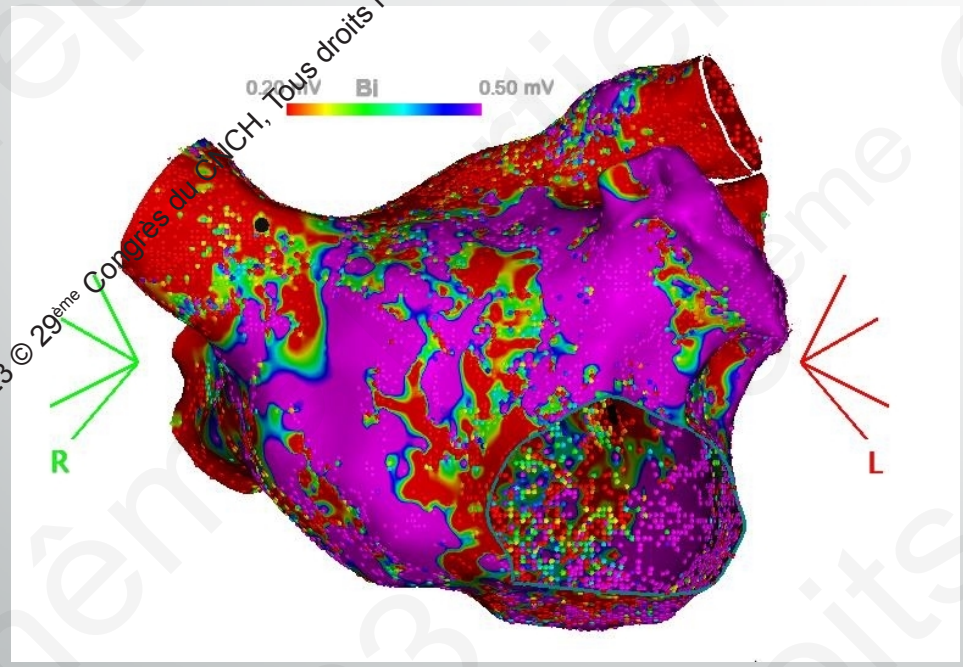
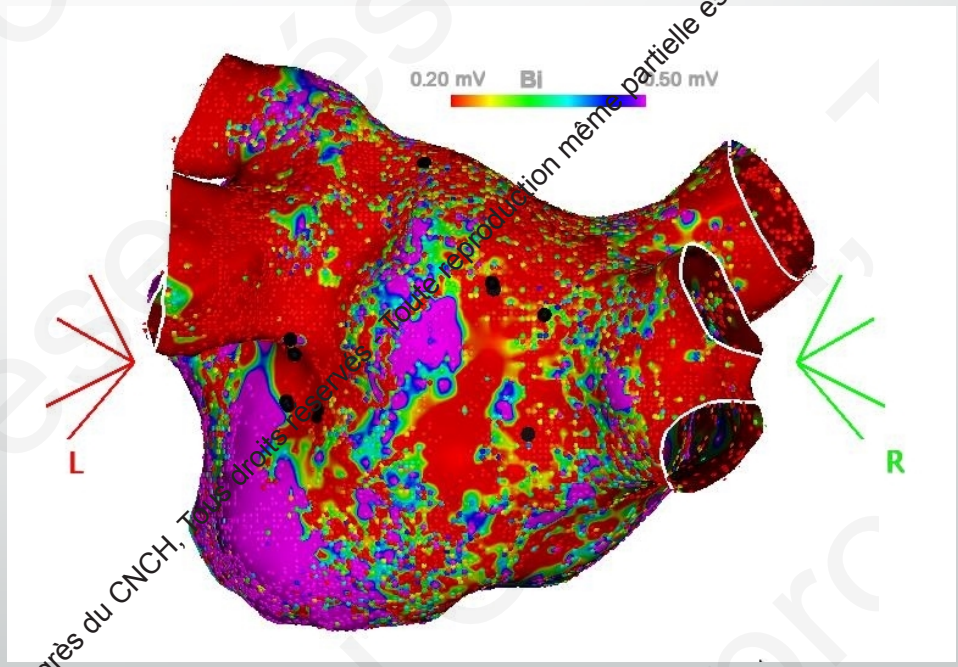
OG 160 ml, substrat très hétérogène, veines modérément connectées





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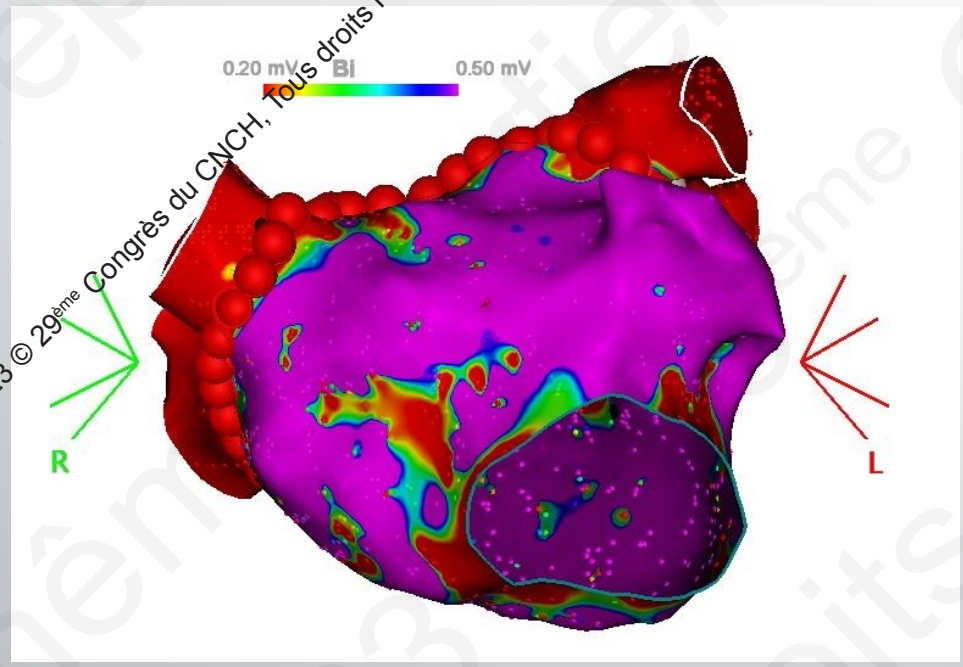
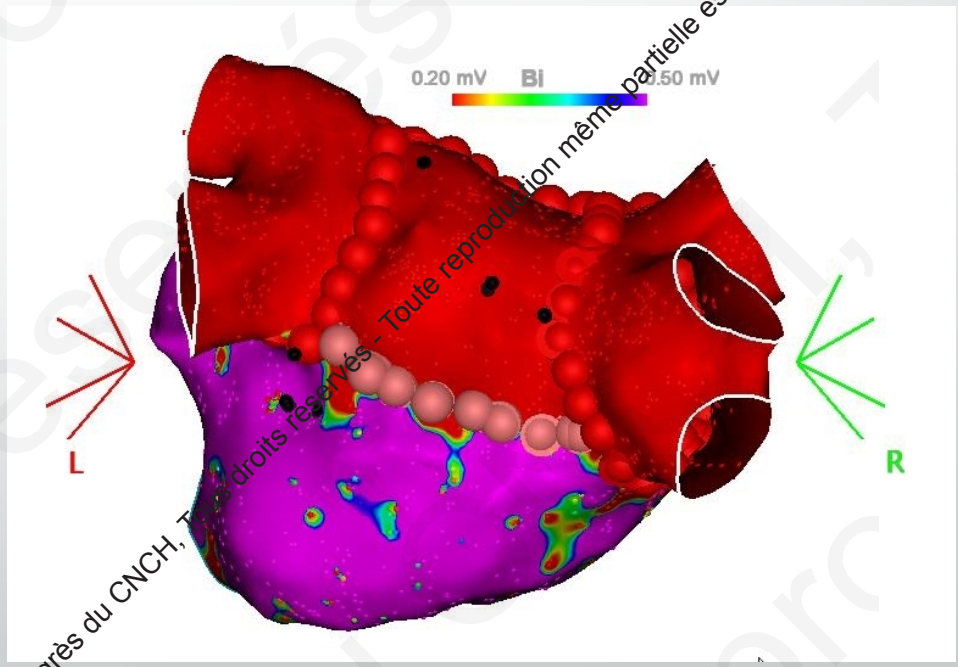
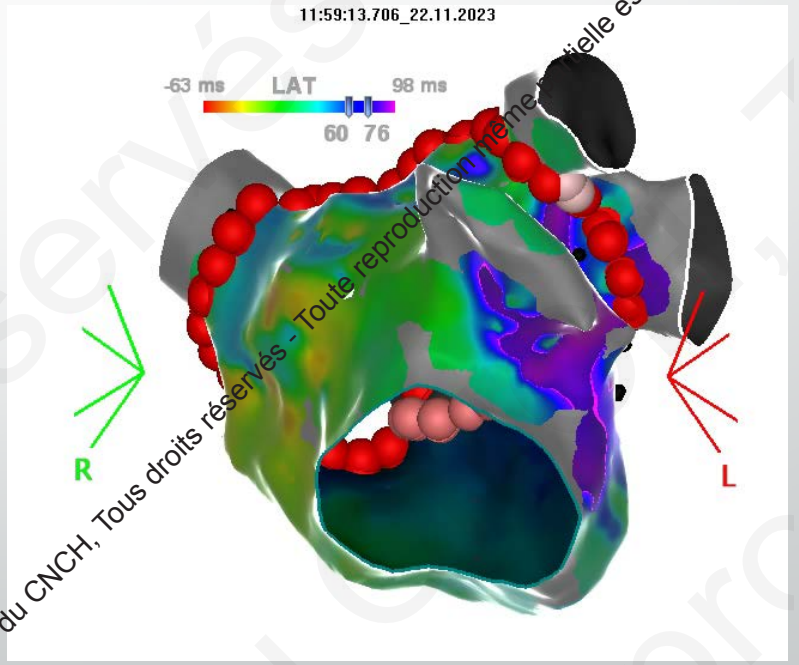
Isolation large des veines + Box post





Potentiel dissocié dans la box / activation en RS



Faut-il faire plus que les veines ?

- Repose sur l'isolation électrique des VPs +++
- Lésions additionnelles selon le type de FA (parox vs. persistante) et le profil du substrat atrial
  - « Tailored approach » plutôt que stratégie systématique
    - Taille de l'OG
    - Voltage du substrat
    - Veines connectées et actives ?
    - Primo ablation ou récidive ?
  - Attention aux flutter G secondaires
    - Less is more !
- Balance bénéfice / risque et consentement éclairé

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La FA: une prise en charge multidisciplinaire

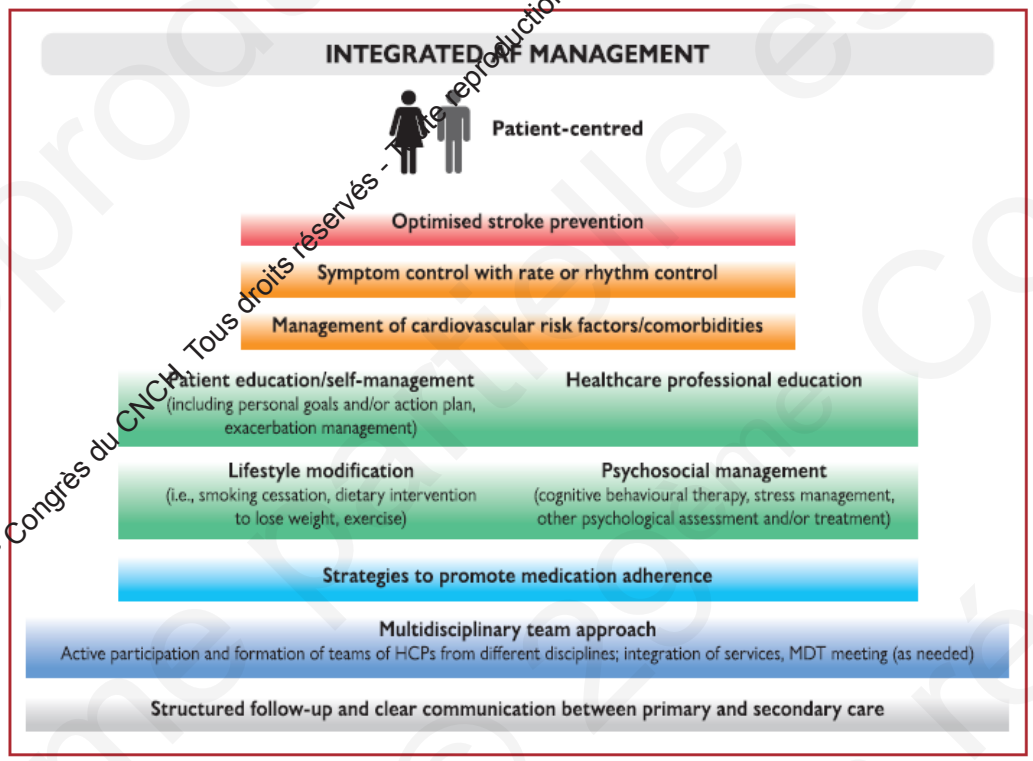

Figure 10 Components of integrated AF management. AF = atrial fibrillation; HCP = healthcare professional; MDT = multidisciplinary team.