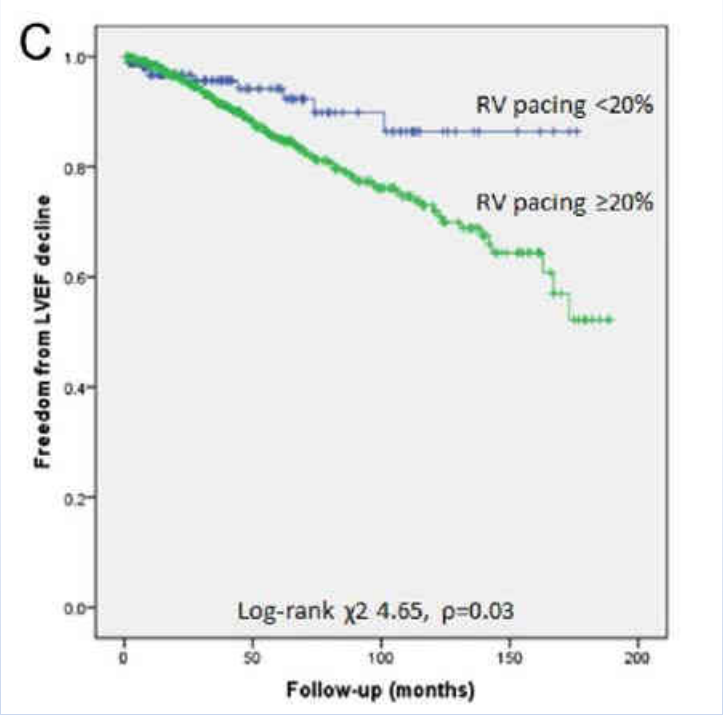
TAKE HOME MESSAGE

Mario Volpicelli

Cardiopatia indotta da pacing

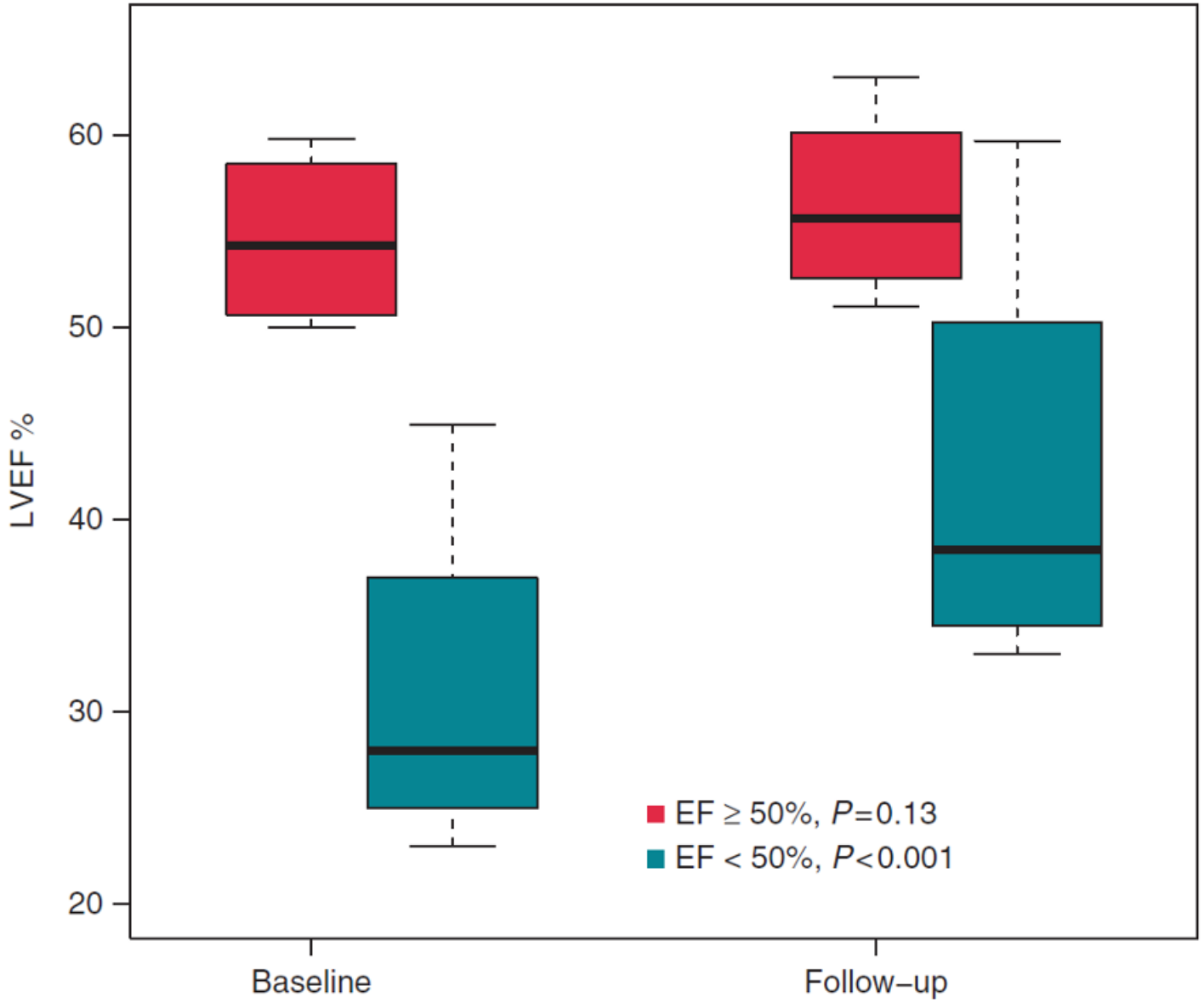
% RVA pacing	Median FU	% de novo HF	Author/Study
• >95% *2005*	4,4yrs	17% NYHA +echo)	*Miyoshi F, PACE*
• >90%	7,8yrs	26% Framingham criteria)	*Zhang, JCE 2008*
• ≥20%	3,3 yrs	20% > 10% decrease in LVEF)	*Khursid, HR 2014*
• 57%±40% *2018*	5 yrs	22% > 10% decrease in LVEF)	*Vijayaraman, HR*
• 65±38% *2019*	4,7yrs	14% >10% decrease in LVEF)	*Sung, EHJ of HF*



15-year survival without LVEF decrease to ≤40%

Fino al 25% dei pazienti con pacing RV sviluppa una cardiopatia indotta da pacing

Conservazione o miglioramento della funzione cardiaca con HBP



- Patients with normal LVEF:

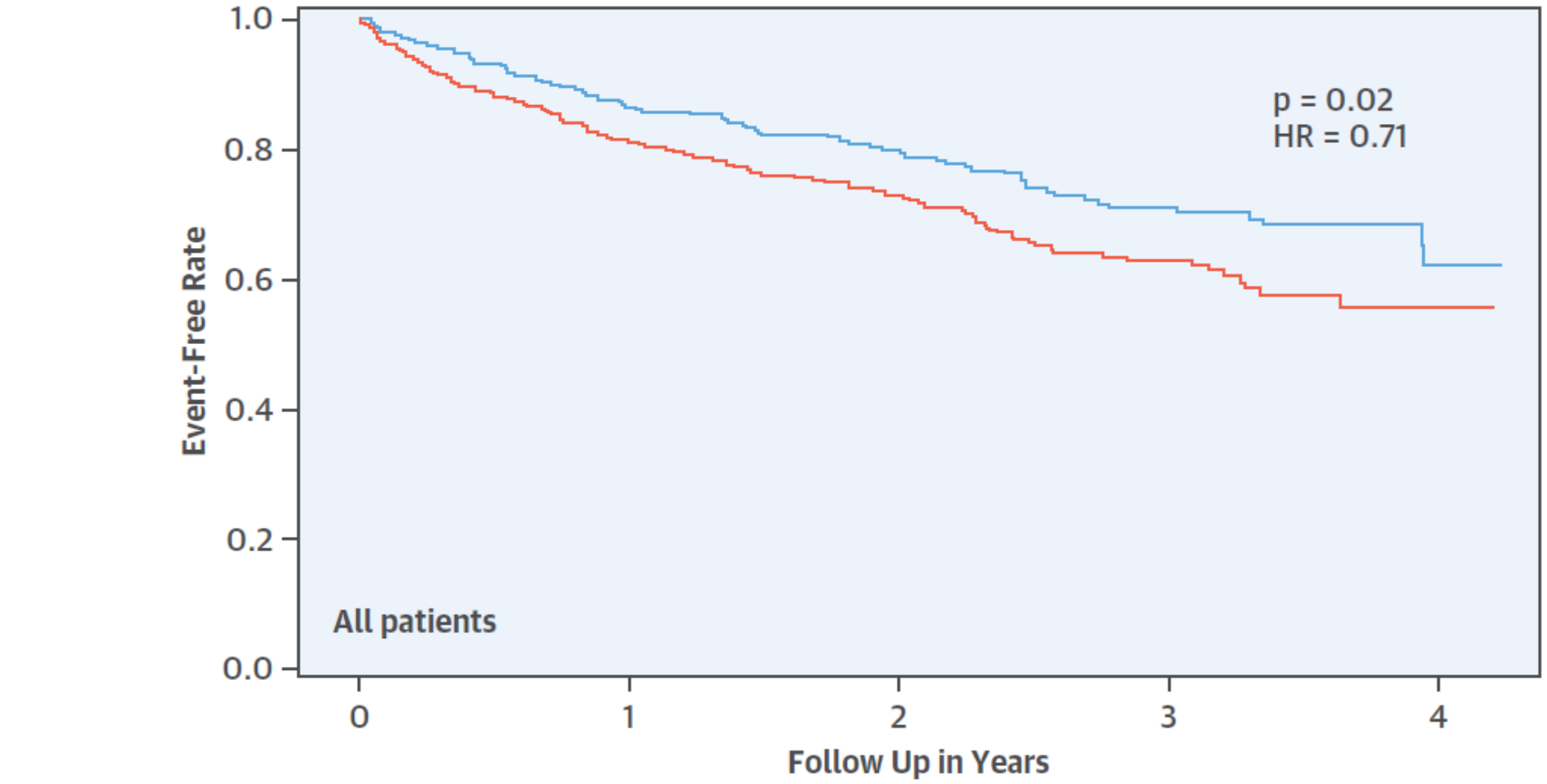
→ Preservation of normal LVEF with HBP

- Patients with depressed EF:

→ Improvement in LVEF with HBP

Zanon et al, Europace 2018

Beneficio clinico dell'HBP



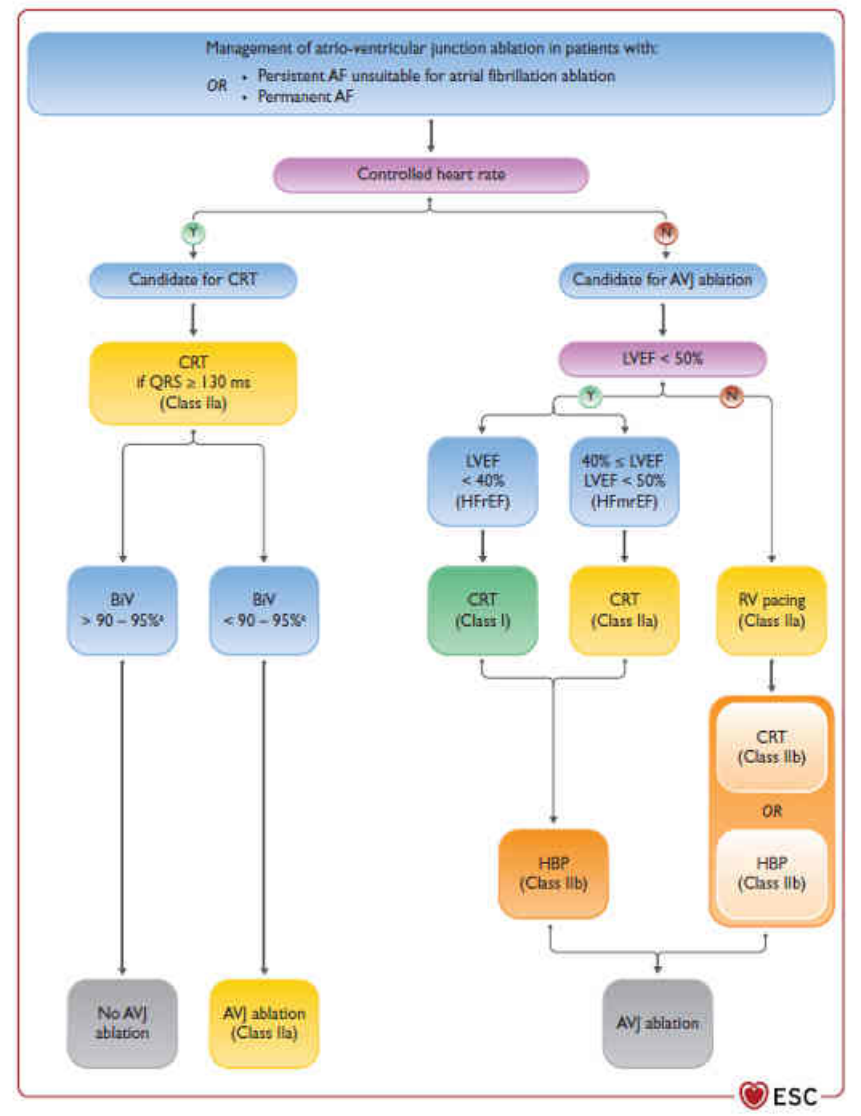
No. at risk					
HBP	332	266	168	98	15
RVP	433	338	191	92	12

His bundle pacing (HBP) — Right ventricular pacing (RVP)

Abdelrahman, JACC 2018

Sviluppi futuri

- La crescente indicazione all'ablazione del nodo anche in pazienti con FE non ridotta potrebbe incrementare l'utilizzo di questa tecnica



Cambiamento indicazione

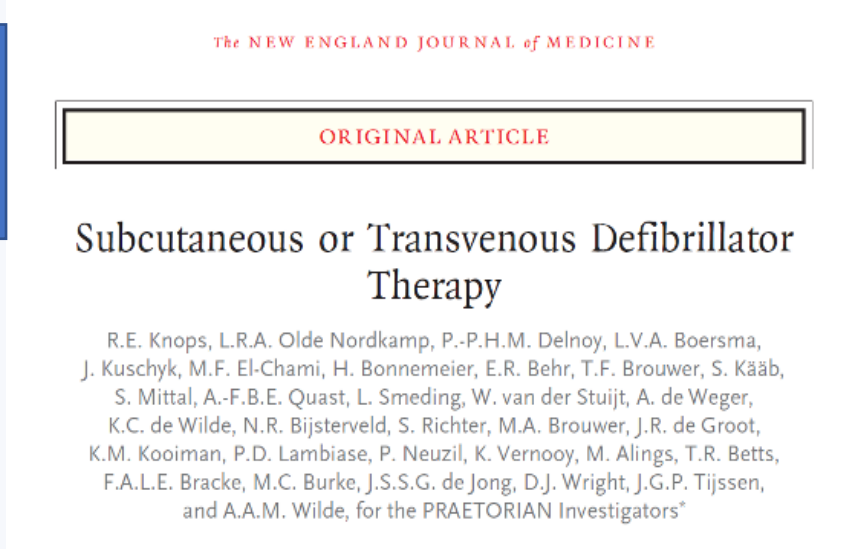
	2013	2021
	Class[a]	
In patients with symptomatic AF and uncontrolled heart rate who are candidates for AVJ ablation (irrespective of QRS duration), CRT is recommended in patients with HFrEF.	IIa	I

Nuove raccomandazioni

In patients with symptomatic AF and an uncontrolled heart rate who are candidates for AVJ ablation (irrespective of QRS duration), CRT rather than standard RV pacing should be considered in patients with HFmrEF.	IIa	C
In patients with symptomatic AF and an uncontrolled heart rate who are candidates for AVJ ablation (irrespective of QRS duration), RV pacing should be considered in patients with HFpEF.	IIa	B
In patients with symptomatic AF and an uncontrolled heart rate who are candidates for AVJ ablation (irrespective of QRS duration), CRT may be considered in patients with HFpEF.	IIb	B

S-ICD: update 2021

Studio PRAETORIAN


The NEW ENGLAND JOURNAL of MEDICINE

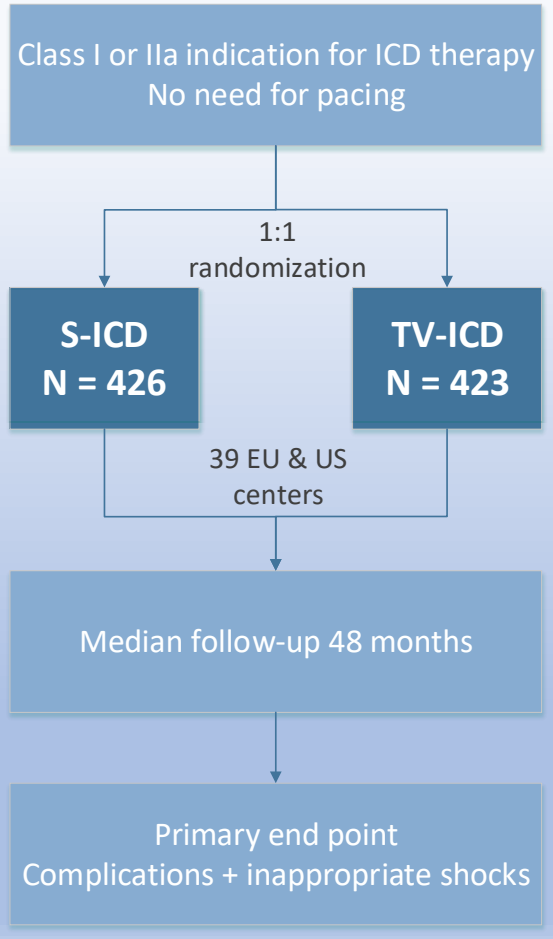
ORIGINAL ARTICLE

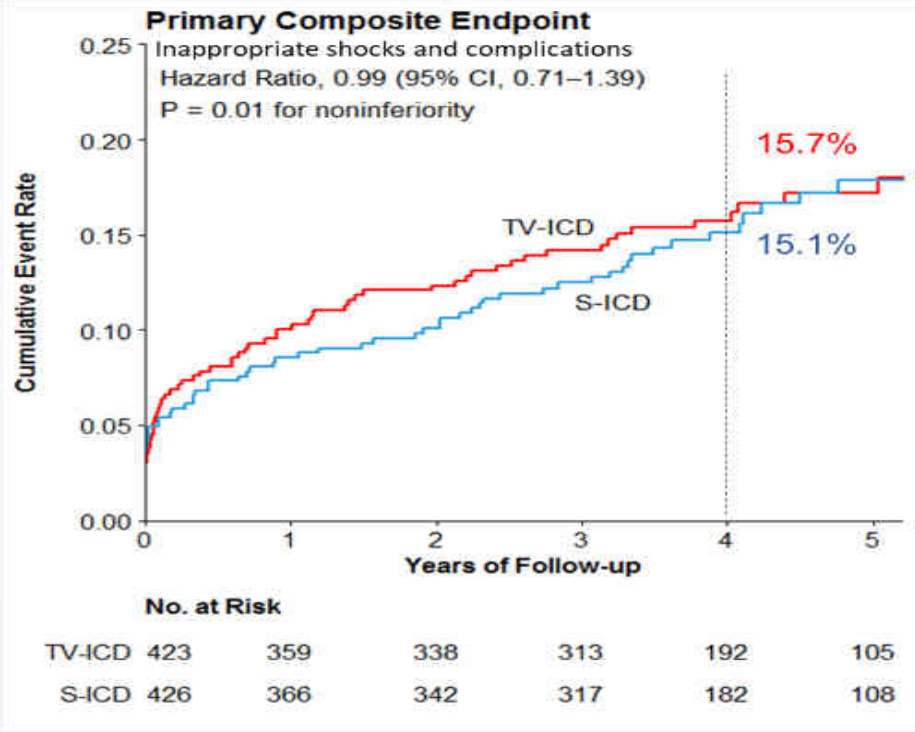
Subcutaneous or Transvenous Defibrillator Therapy

R.E. Knops, L.R.A. Olde Nordkamp, P.-P.H.M. Delnoy, L.V.A. Boersma, J. Kuschyk, M.F. El-Chami, H. Bonnemeier, E.R. Behr, T.F. Brouwer, S. Kääb, S. Mittal, A.-F.B.E. Quast, L. Smeding, W. van der Stuijt, A. de Weger, K.C. de Wilde, N.R. Bijsterveld, S. Richter, M.A. Brouwer, J.R. de Groot, K.M. Kooiman, P.D. Lambiase, P. Neuzil, K. Vernooy, M. Alings, T.R. Betts, F.A.L.E. Bracke, M.C. Burke, J.S.S.G. de Jong, D.J. Wright, J.G.P. Tijssen, and A.A.M. Wilde, for the PRAETORIAN Investigators*

Ipotesi:
L'S-ICD è **non-inferiore** al TV-ICD per quanto riguarda i principali eventi avversi correlati all'ICD:

- **Shock inappropriati**
- **Complicanze correlate all'ICD che richiedono intervento**
- **Complicanze correlate all'elettrocatetere**



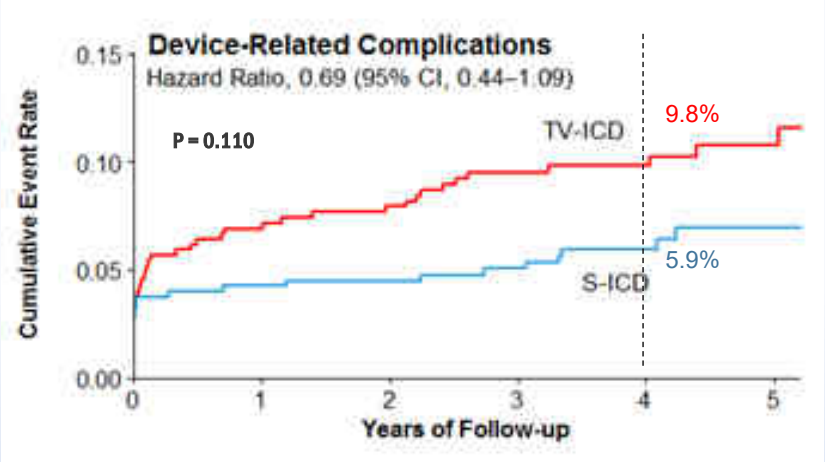


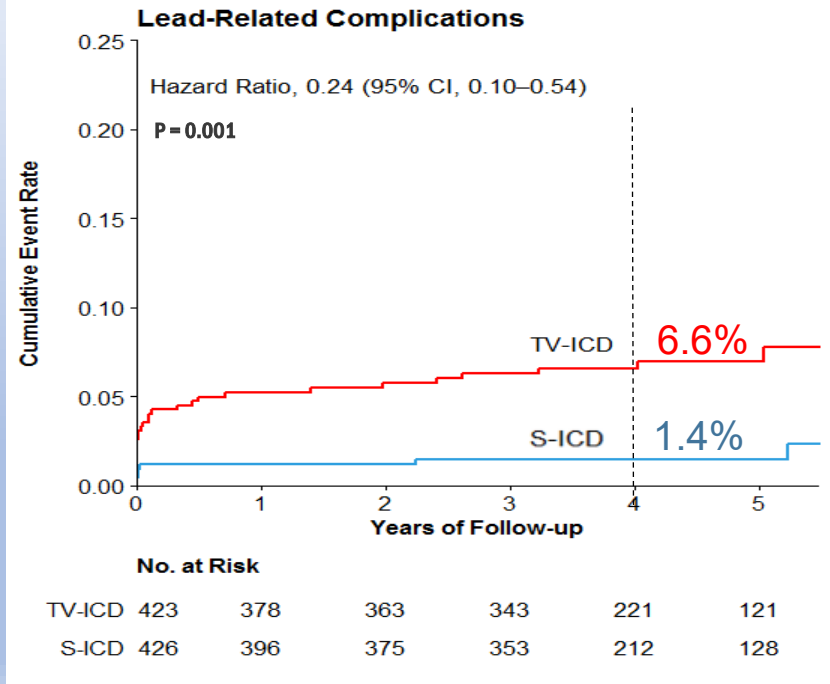
Primary Outcome:
Non-inferiority Demonstrated

Complicanze legate al device e al catetere

Trend da confermare con un follow up più lungo

	S-ICD (n = 426)	TV-ICD (n = 423)
Primary composite endpoint	68 (15.1%)	68 (15.7%)
Device related complications	31 (5.9%)	44 (9.8%)
– Infection	4	8
– Bleeding	8	2
– Thrombotic event	1	2
– Pneumothorax	0	4
– Lead perforation	0	4
– Lead repositioning	2	7
– Other	19	20
• Lead replacement	3	9
• Device or sensing malfunction	8	6
• Pacing indication	5	1
• Implantation or DFT failure	3	3
• Pain or discomfort	2	3

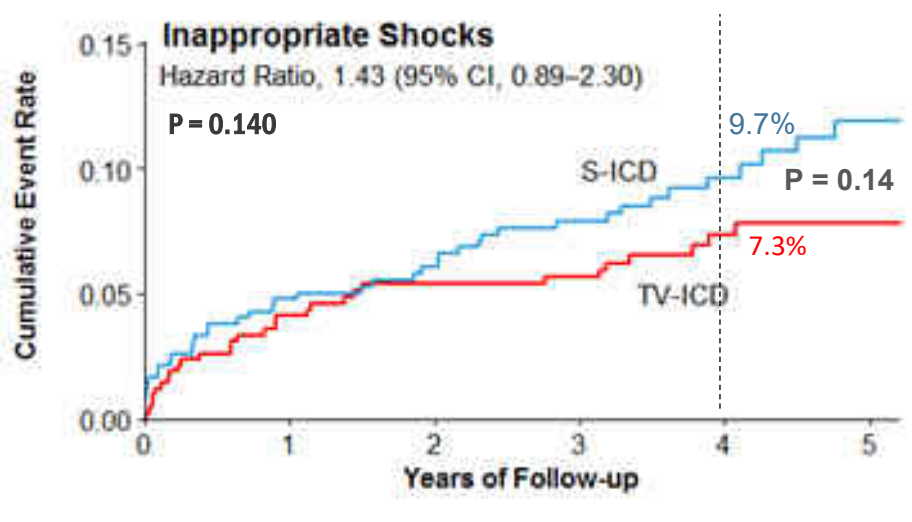




Shock inappropriati

Non-significantivamente maggiori

	S-ICD (n = 426)	TV-ICD (n = 423)
Primary composite endpoint	68 (15.1%)	68 (15.7%)
Inappropriate shock	41 (9.7%)	29 (7.3%)
– AF/SVT	15	27
– Cardiac oversensing	20	2
– Noncardiac oversensing	8	0



Comparable performance in the first 2 years due to new generation systems

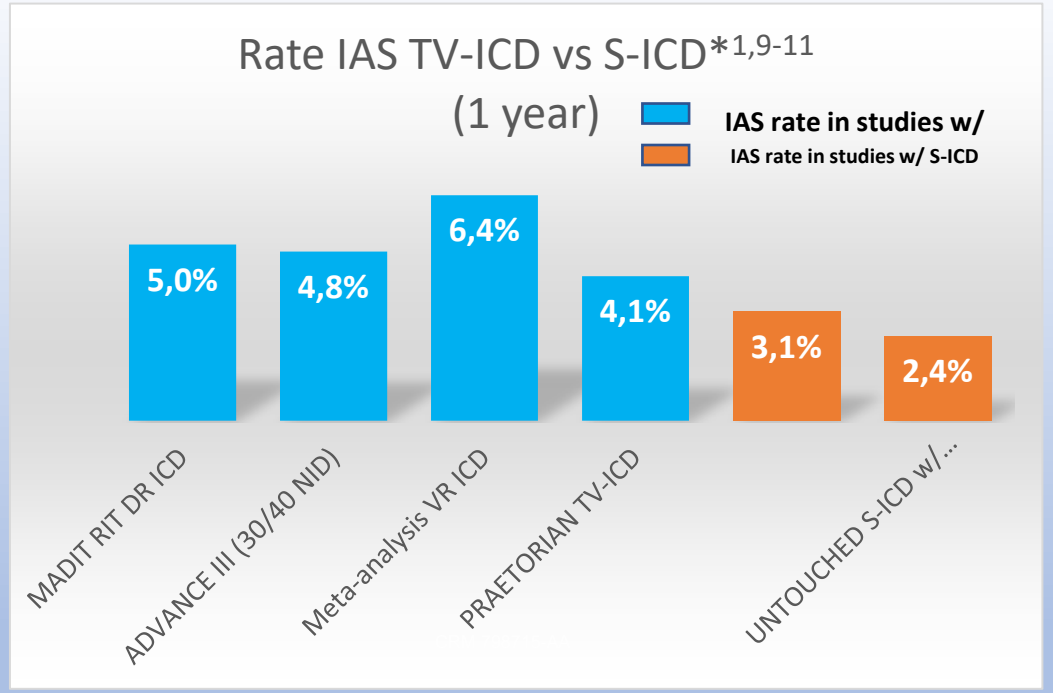
Study limitations:

- ✓ Old device generations (less than 15% of patient with last gen and Smart Pass filter)
- ✓ Initial expertise with implant technique
- ✓ Old screening manual tool

UNTOUCHED | Inappropriate shocks (IAS)

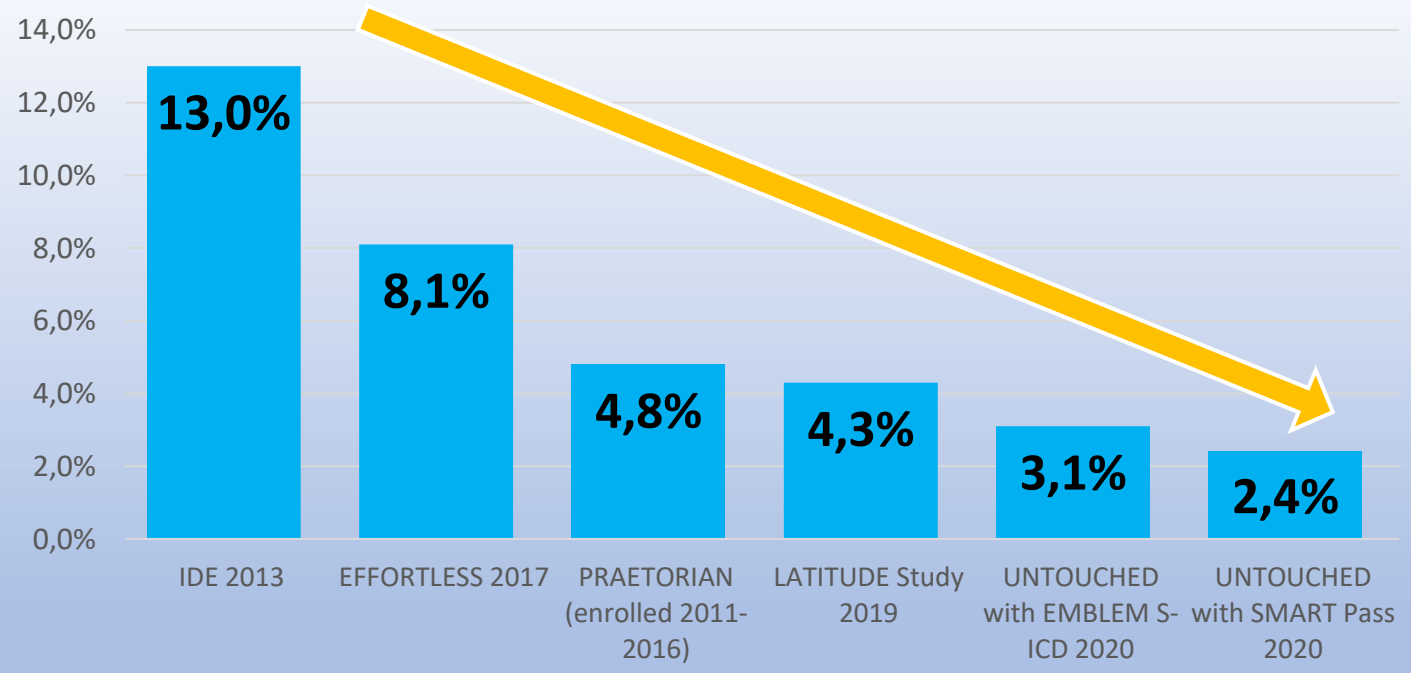
Low rate of IAS in Primary Prevention low EF

- ✓ 3.1% overall rate of IAS at 1 year[12]
- ✓ 2.4% at 1 year in patients who received an EMBLEM MRI w/ SMART Pass™ Filter [12]



- *Il rate di IAS è tra I più bassi negli studi moderni*

- *La riduzione degli IAS nel tempo non è solo frutto degli algoritmi ma anche del miglioramento della tecnica di impianto*



CONCLUSIONI

Praetorian

L'S-ICD non è inferiore al TV-ICD per quanto riguarda la maggior parte degli eventi avversi legati all'ICD

- Nessuna differenza nelle complicanze legate al device
- Nessuna differenza in shock inappropriati
- Minori complicanze legate all'elettrodo

Untouched

il rate di shock inappropriati (3.1% ad un anno) è la più bassa mai riportata per SICD e più bassa di molti studi su TV-ICD con programmazioni mirate a ridurre gli shock inappropriati

Crioablazione fast-track della fibrillazione atriale parossistica

LA CRIOABLAZIONE HA LA STESSA EFFICACIA DELLA RADIOFREQUENZA

STUDIO CIRCA DOSE: CRYO VS RF con forza di contatto

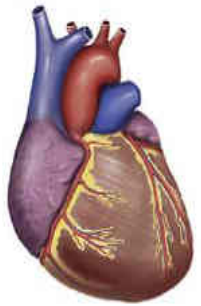
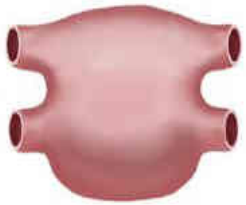
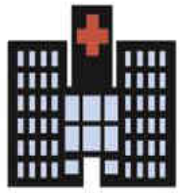
Circulation

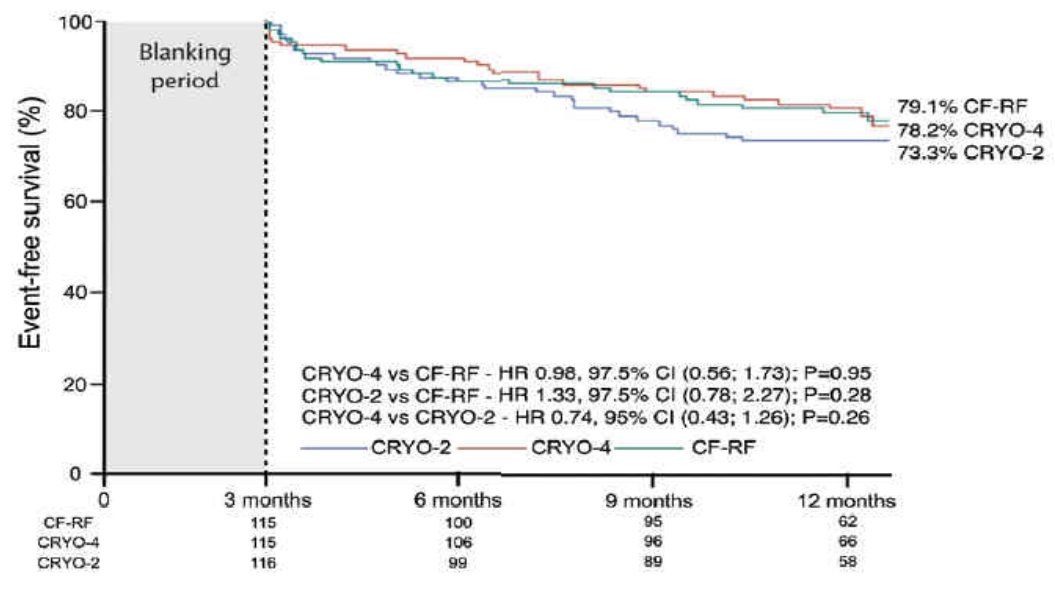
ORIGINAL RESEARCH ARTICLE

Cryoballoon or Radiofrequency Ablation for Atrial Fibrillation Assessed by Continuous Monitoring

A Randomized Clinical Trial

2020

Study Population	Intervention	Outcome			
					
346 patients with antiarrhythmic drug-refractory paroxysmal AF	Pulmonary vein isolation with contact-force RF or cryoballoon	↓ 75% Cardioversion	↓ 62% ER Visits	↓ 43% Hospitalization	↓ 86% AAD Use



CONCLUSION

The CIRCA-DOSE study demonstrates that PVI performed by cryoballoon ablation or by CF-RF ablation results in comparable freedom from recurrent atrial tachyarrhythmia as assessed by continuous cardiac rhythm monitoring.

CRYO COME TERAPIA PRIMA SCELTA: STOP AF

L'ABLAZIONE CRYO COME PRIMA SCELTA E' SUPERIORE AI FARMACI

The NEW ENGLAND JOURNAL of MEDICINE

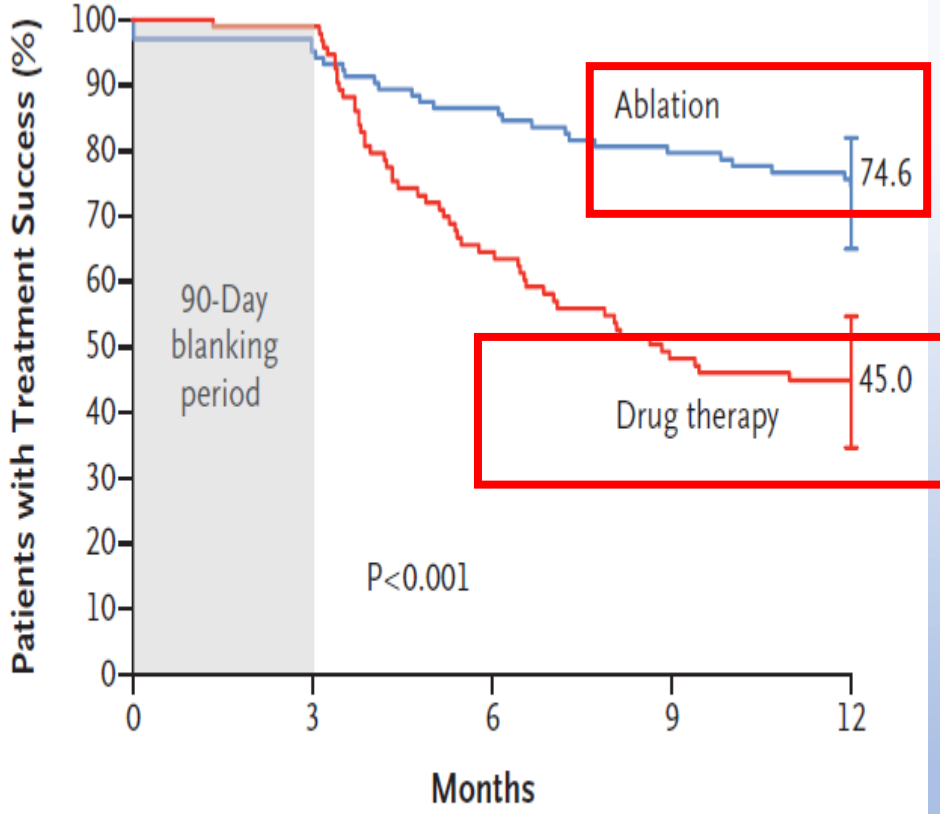
ORIGINAL ARTICLE

Cryoballoon Ablation as Initial Therapy for Atrial Fibrillation

Oussama M. Wazni, M.D., Gopi Dandamudi, M.D., Nitesh Sood, M.D., Robert Hoyt, M.D., Jaret Tyler, M.D., Sarfraz Durrani, M.D., Mark Niebauer, M.D., Kevin Makati, M.D., Blair Halperin, M.D., Andre Gauri, M.D., Gustavo Morales, M.D., Mingyuan Shao, Ph.D., Jeffrey Cerkvenik, M.S., Rachelle E. Kaplon, Ph.D., and Steven E. Nissen, M.D., for the STOP AF First Trial Investigators*

METHODS

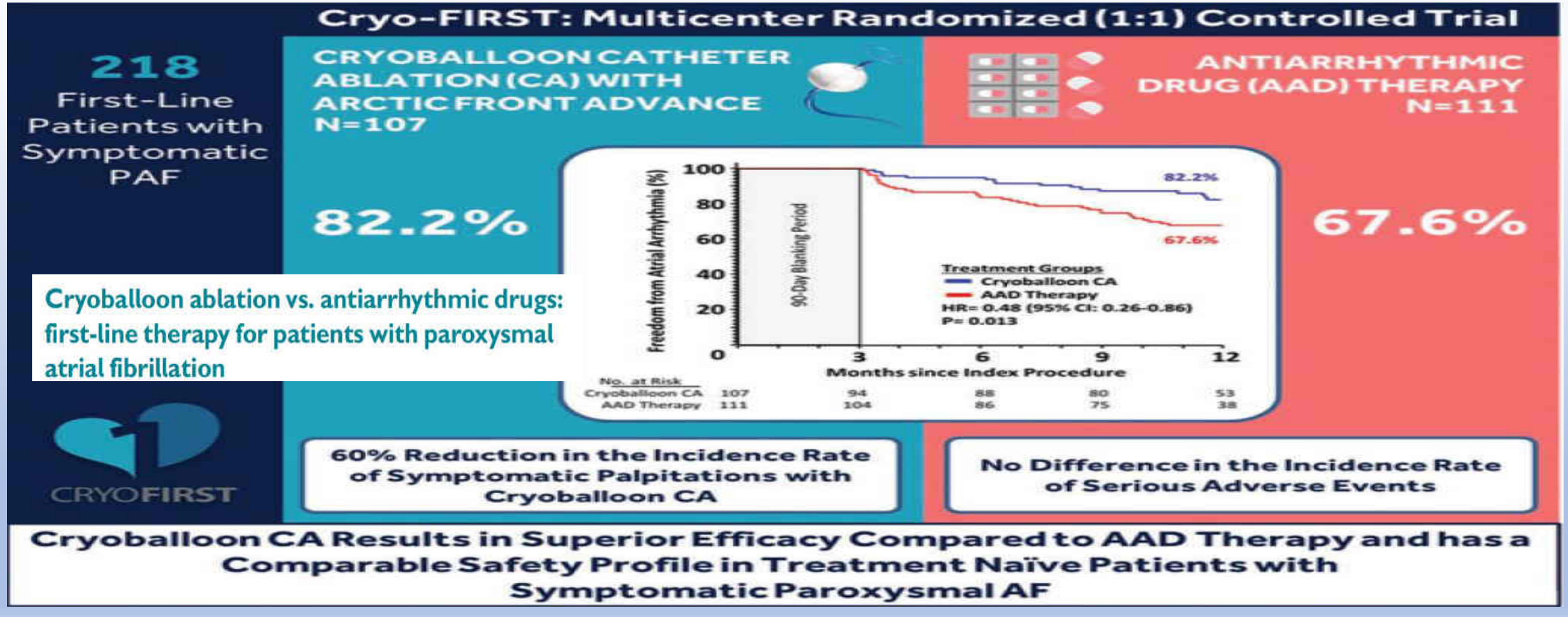
We performed a multicenter trial in which patients 18 to 80 years of age who had paroxysmal atrial fibrillation for which they had not previously received rhythm-control therapy were randomly assigned (1:1) to receive treatment with antiarrhythmic drugs (class I or III agents) or pulmonary vein isolation with a cryoballoon. Arrhythmia monitoring included 12-lead electrocardiography conducted at baseline and at 1, 3, 6, and 12 months; patient-activated telephone monitoring conducted weekly and when symptoms were present during months 3 through 12; and 24-hour ambulatory monitoring conducted at 6 and 12 months.



No. at Risk					
Ablation	104	99	88	81	70
Drug therapy	99	93	60	44	39

NUOVI TRIAL SU TERAPIA PRIMA SCELTA

L'ABLAZIONE CRYO COME PRIMA SCELTA E' SUPERIORE AI FARMACI



Ablazione transcatetere della tachicardia ventricolare: strategie di trattamento

ABLAZIONE DI TV RIDUCE LA MORTALITA'

Nei centri esperti l'ablazione di TV riduce anche la mortalità e non solo gli shock del device

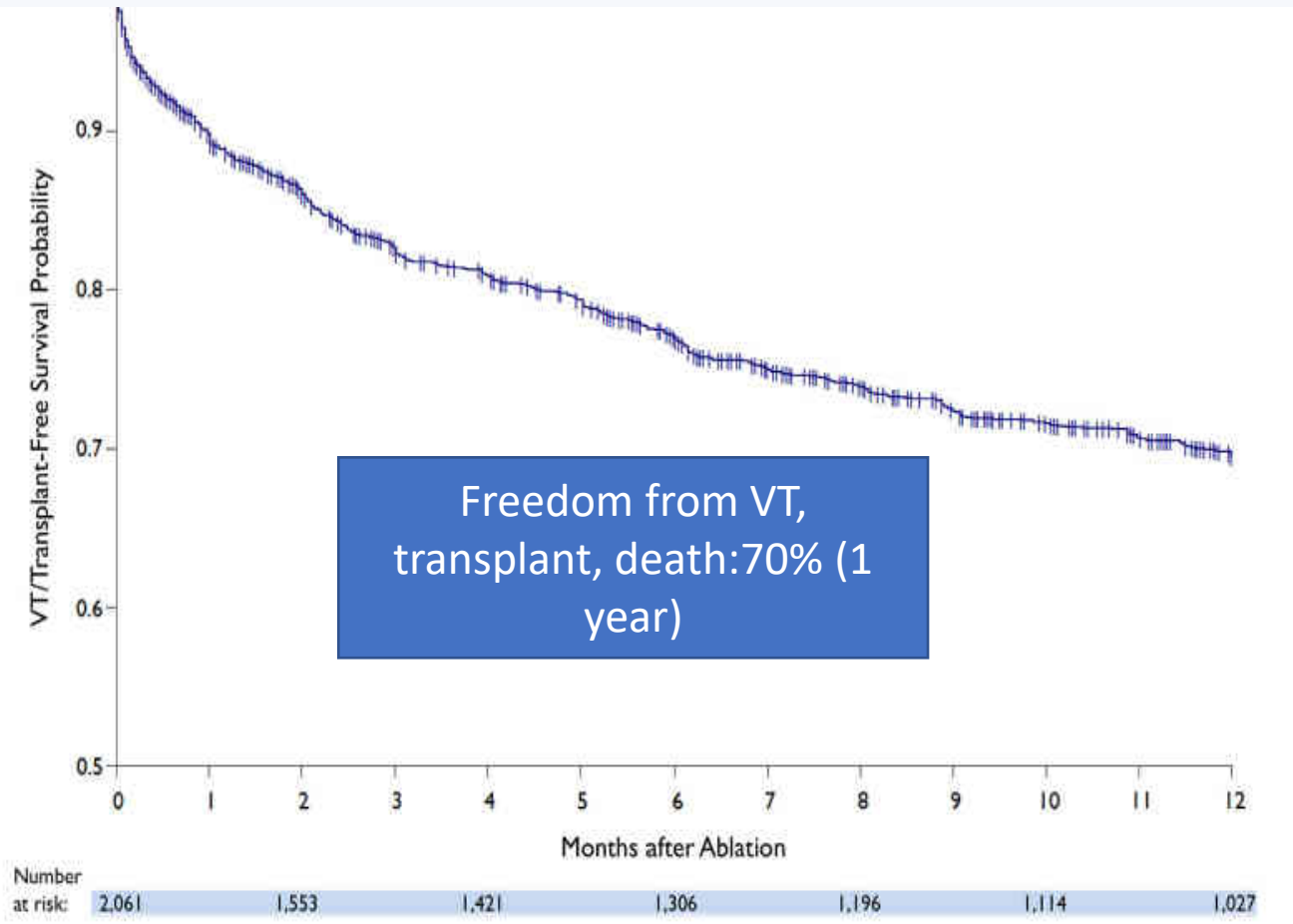
Freedom from recurrent ventricular tachycardia after catheter ablation is associated with improved survival in patients with structural heart disease: An Internationa VT Ablation Center Collaborative Group study

Roderick Tung, MD, FHRS,* Marmar Vaseghi, MD, MS, FHRS,* David S. Frankel, MD, FHRS,†

METHODS Analysis of 2061 patients with structural heart disease referred for catheter ablation of scar-related VT from 12 international centers was performed. Data on clinical and procedural variables, VT recurrence, and mortality were analyzed. Kaplan–Meier analysis was used to estimate freedom from recurrent VT, transplant, and death.

Discussion

The present study draws on some of the most experienced centers around the world and demonstrates that catheter ablation of scar-related VT results in a 70% freedom from VT recurrence, transplant, and mortality at 1 year. Patients referred for VT ablation have a transplant/mortality rate of 15% at 1 year. Freedom from recurrent VT after catheter ablation is strongly associated with a significant reduction in all-cause mortality, independent of EF and heart failure status.



Freedom from VT, transplant, death:70% (1 year)

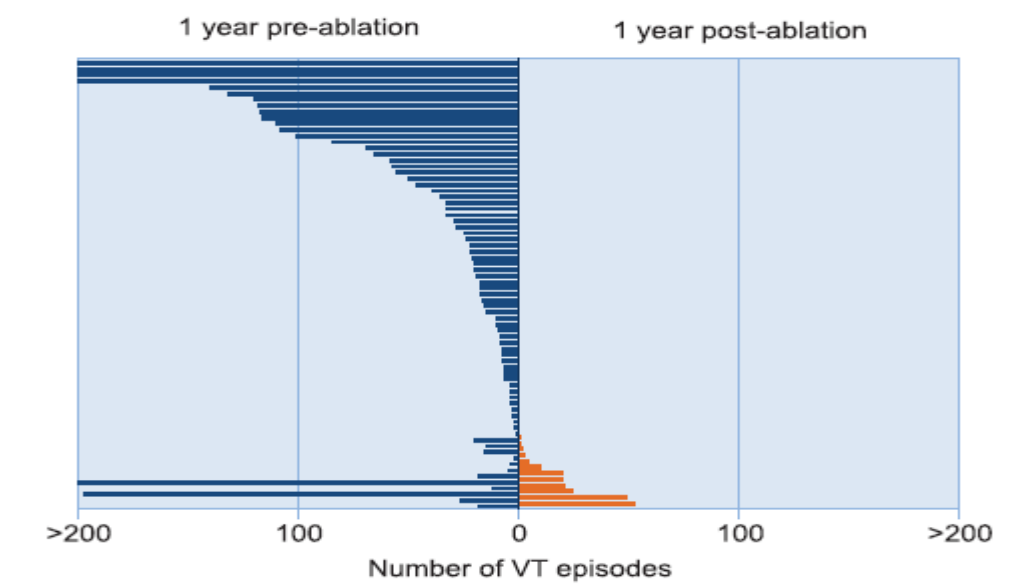
Figure 2 Kaplan–Meier estimate of ventricular tachycardia (VT) and transplant-free survival in the overall cohort.

ABLAZIONE ESTENSIVA DEL SUBSTRATO E' EFFICACE

Se non è possibile mappare la TV l'ablazione del substrato è associata ad ottimo outcome

ORIGINAL ARTICLE

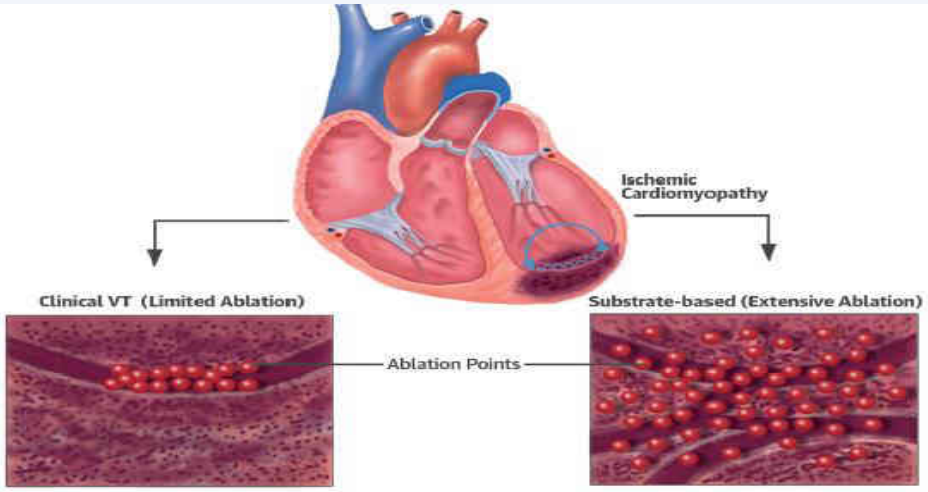
Long-Term Outcome of Substrate Modification in Ablation of Post–Myocardial Infarction Ventricular Tachycardia

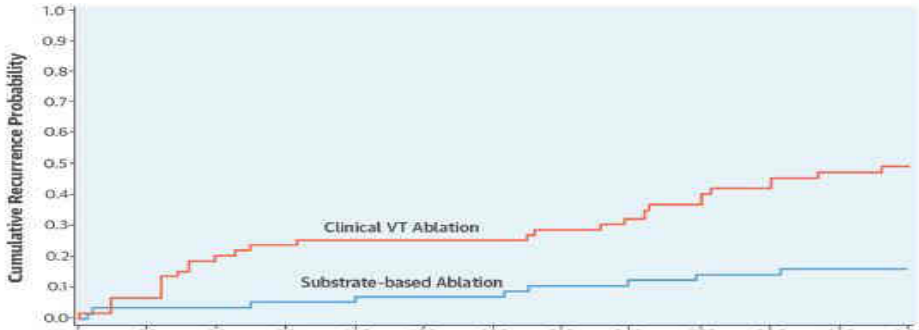


CONCLUSIONS: In this monocentric study, substrate modification targeting LAVA for post–myocardial infarction VT resulted in a substantial reduction of VT storm and implantable cardioverter defibrillator shocks and up to 49% of patients free from arrhythmia at 5 years after a single procedure. Complete LAVA elimination, multielectrode mapping, and real-time integration were associated with improved VA-free survival.

Ablation of Stable VTs Versus Substrate Ablation in Ischemic Cardiomyopathy

The VISTA Randomized Multicenter Trial





IL MAPPAGGIO AD ALTA RISOLUZIONE MIGLIORA GLI APPROCCI TRADIZIONALI

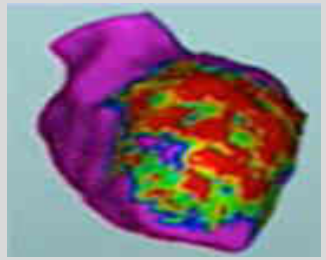
Il mappaggio ad alta densità di un substrato predice i siti critici meglio degli approcci standard

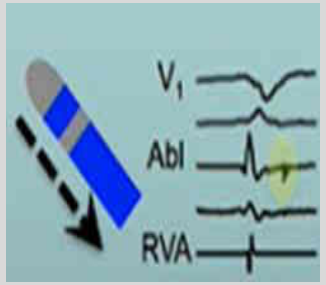
Infarct-Related Ventricular Tachycardia

Redefining the Electrophysiological Substrate of the Isthmus During Sinus Rhythm

Elad Anter, MD, Andre G. Kleber, MD, Markus Rottmann, PhD, Eran Leshem, MD, MHA, Michael Barkagan, MD
Cory M. Tschabrunn, PhD, Fernando M. Contreras-Valdes, MD, Alfred E. Buxton, MD

Approcci consolidati basati su criteri convenzionali ed elettrofisiologici





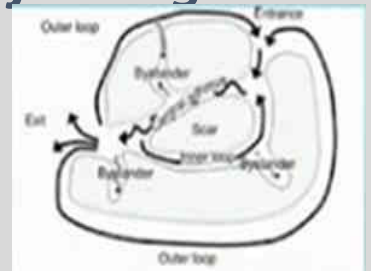
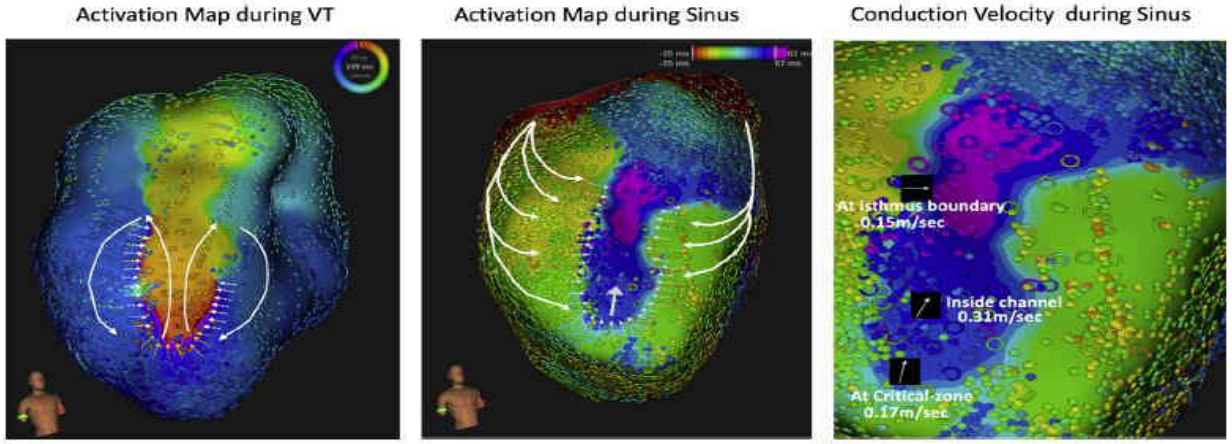


FIGURE 3 Conduction Properties During Sinus Rhythm at Isthmus Sites



The primary finding of this study is the strong cor relation between conduction properties during sinus rhythm and isthmus sites during tachycardia. Areas with SAG during sinus rhythm corresponded to isthmus sites during tachycardia, and those areas with the most significant activation gradients during sinus rhythm corresponded to critical zones that were common to multiple tachycardia configurations.

SAGs during sinus rhythm were more sensitive, specific, and predictive of isthmus sites compared with voltage and EGM criteria.