Pro e contro dei sistemi di mappatura elettroanatomica nell'uso dei cateteri a PFA one-shot

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EAM nelle procedure di FA con PFA

PRO

- ✓Navigazione senza fluoroscopia
- ✓Ricostruzione anatomica personalizzata
- ✓Integrazione TAC/RM
- ✓Marcatura delle applicazioni
- ✓Verifica dell'isolamento
- ✓Procedure complesse oltre la semplice PVI (osti comuni, flutter atipici, procedure ibride, etc)

➢

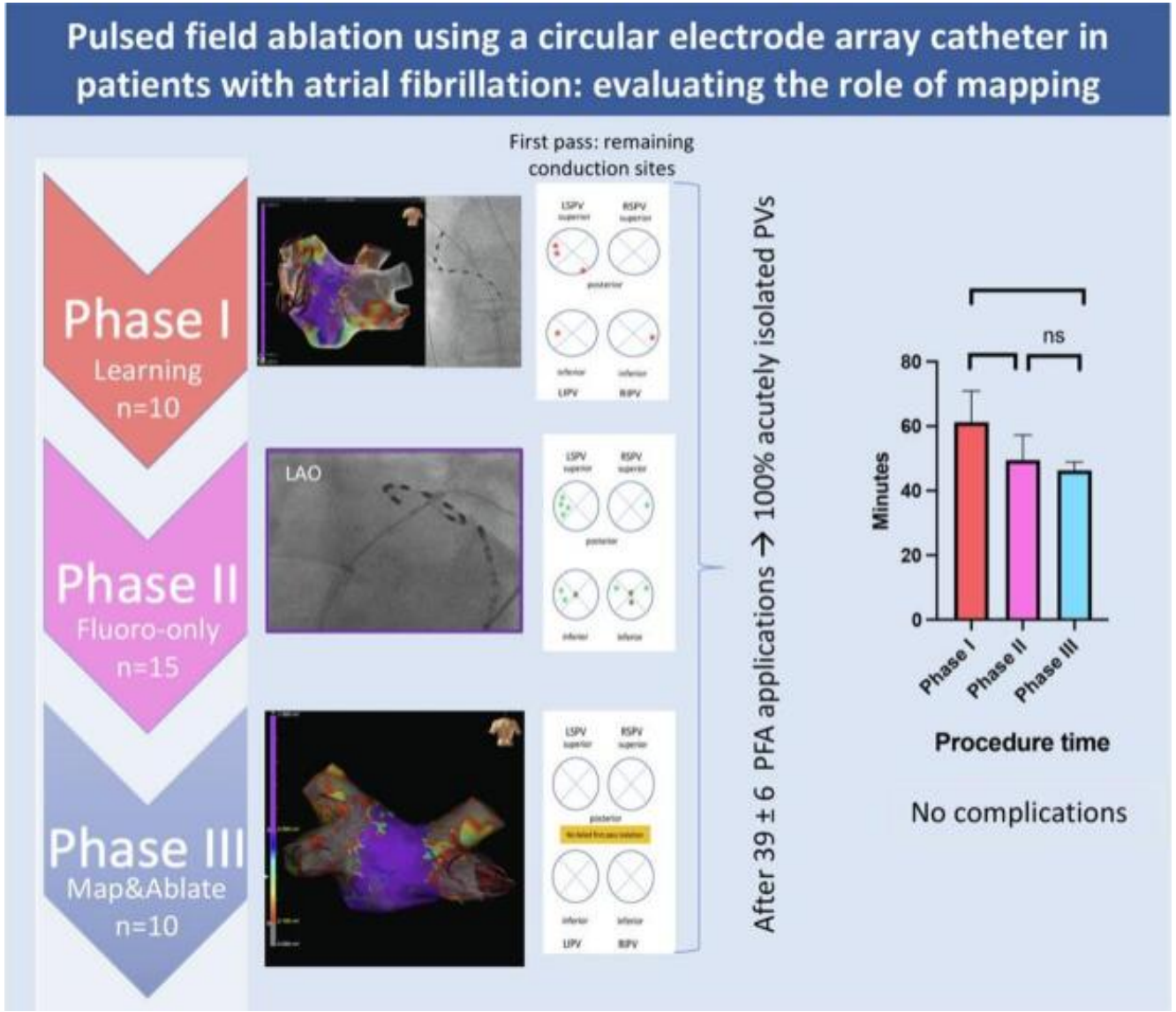
CONTRO

Costi

The cPFA-catheter allows for fast and efficient PVI.

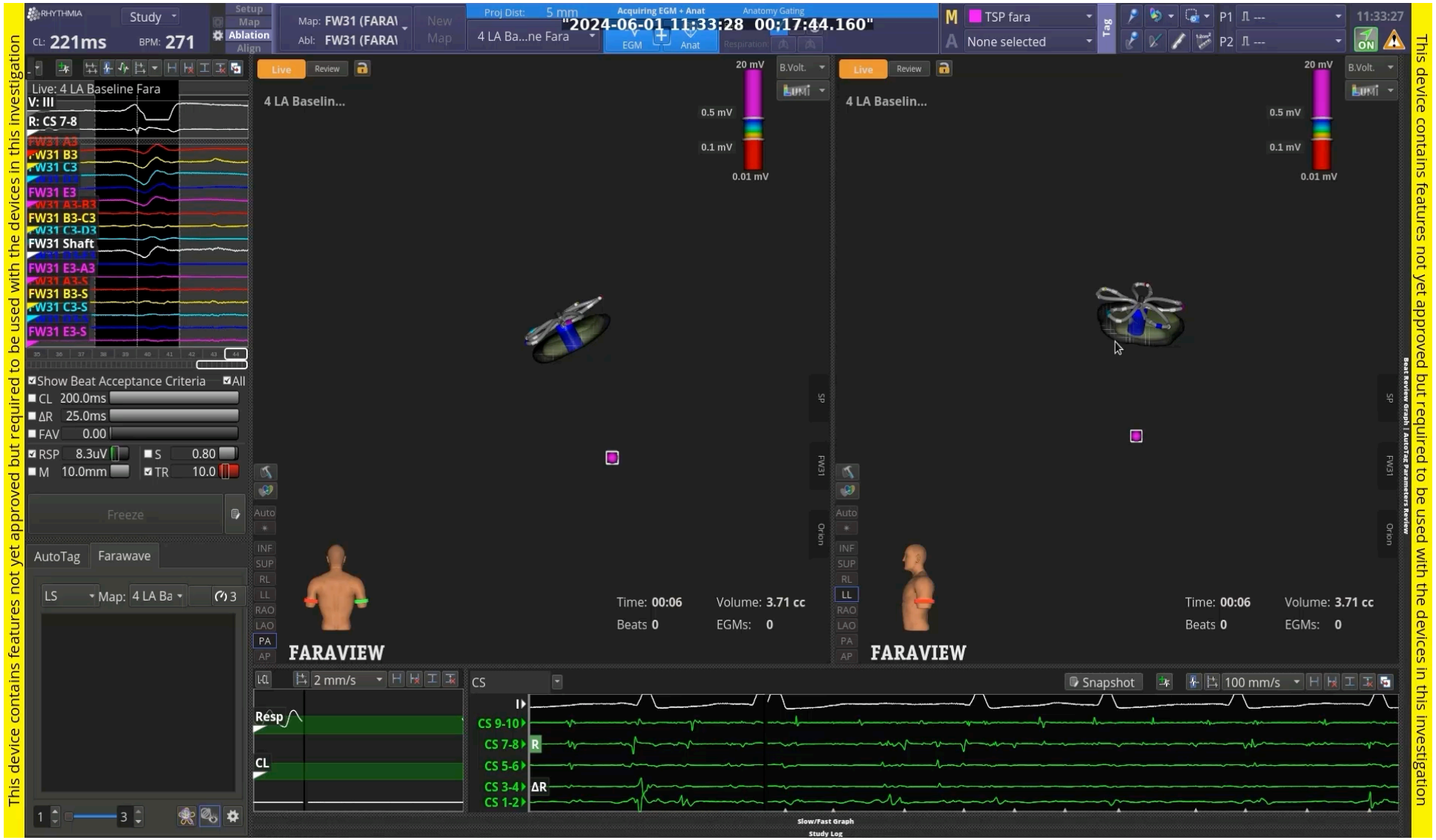
A fluoroscopy-only approach creates distal PV ablation lesions that are associated with residual PV conduction along the carina and anterior antrum.

However, with visualization and mapping, creation of wide antral ablation lesions is feasible without prolonging procedural duration.

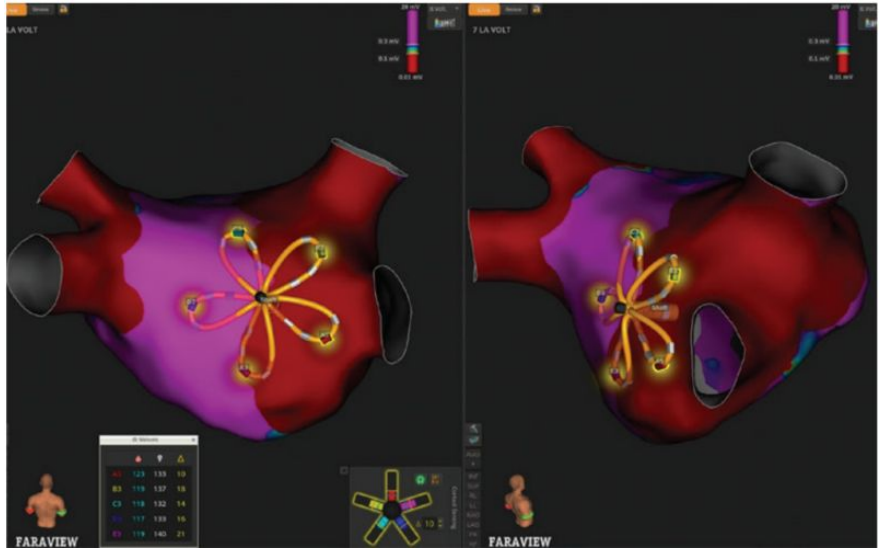


Gunawardene MA et al. Int J Cardiol Heart Vasc. 2025 Mar 31

Faravawe NAV



FARAVAWE NAV

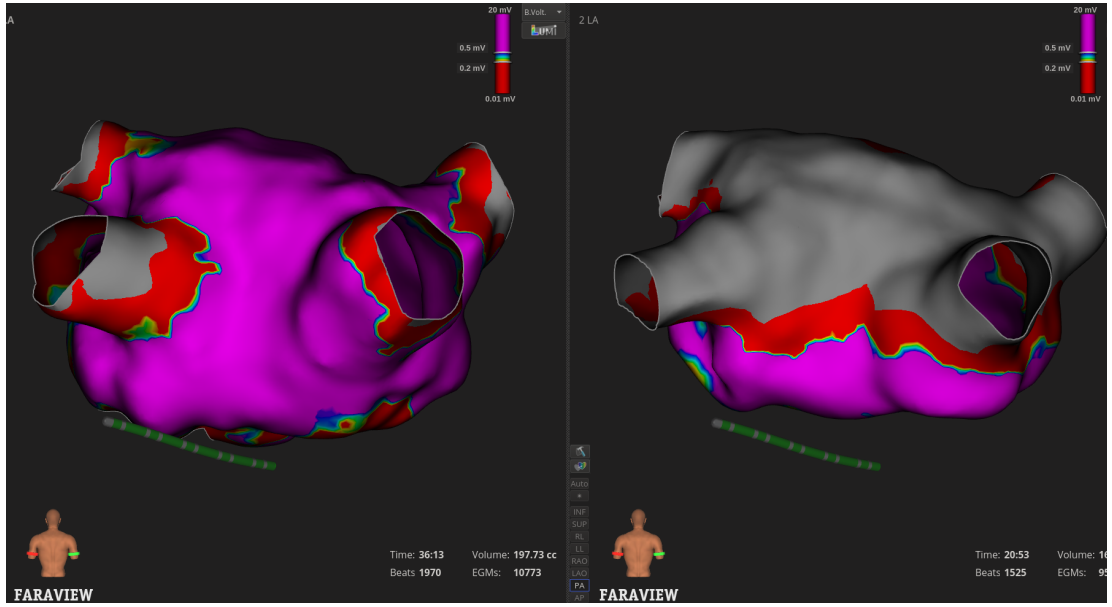


Manovrabilità

- Ottima manovrabilità del catetere

Sistema di mappaggio

- Buona comprensione della mappa e resa anatomica



Informazione del contatto

- Basato su impedenza locale

Tipo di procedura

- Marchio CE per l’isolamento di PVs e PW

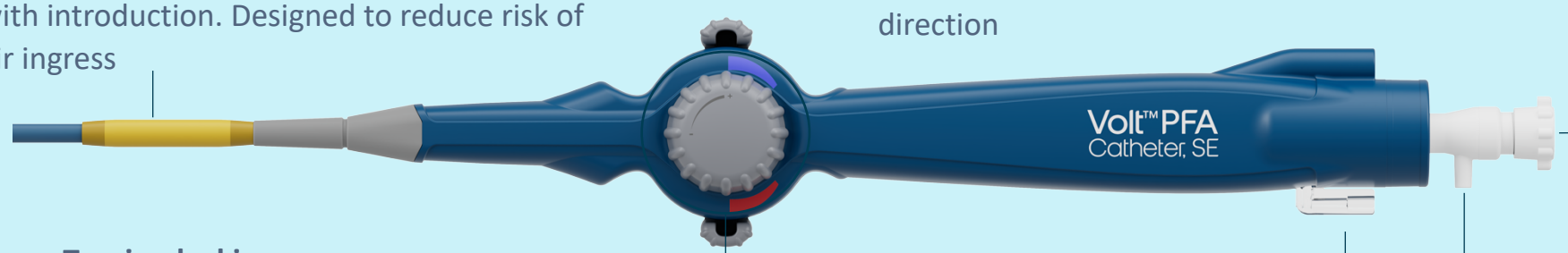
VOLT PFA

Straightener tool fits flush against Agilis™ NxT Steerable Introducer (13 F) hub to assist with introduction. Designed to reduce risk of air ingress

Bidirectional catheter deflection: Greater than 90° deflection in each direction

Hemostasis hub allows for guidewire introduction through the device to aid in positioning

*loosen hub when inserting a guidewire but don't loosen too much or it will come off



Tension locking allows the operator to use the actuator and deflectable section in an unlocked state or adjust the tension to where the actuator and deflectable section are locked in place

Inflation lumen used for inflation and deflation of the balloon utilizing a saline/contrast mixture fill volume of 10 cc

Central lumen for saline/contrast injection

12.5 F catheter shaft made of compliant thermoplastic elastomer material

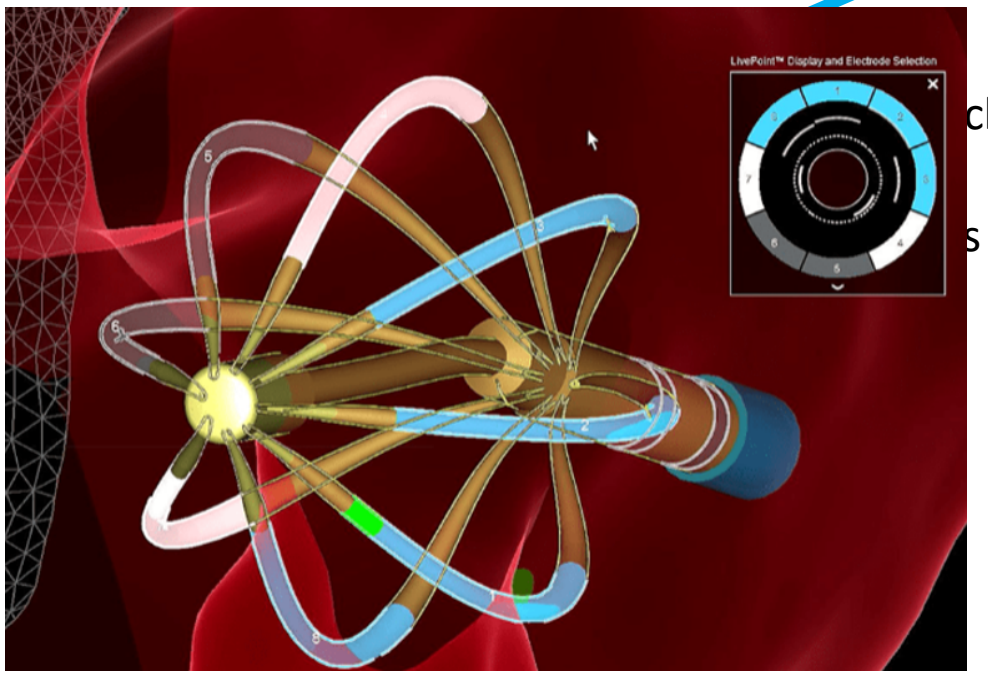
Radiopaque balloon when inflated with a saline contrast mixture

28 mm balloon diameter designed to align with average human vein dimensions

VOLT PFA

LivePoint displays the tissue proximity data associated with the electrodes from the Volt catheter.

Spline coloring:
BLUE – Spline electrode has **optimal** tissue proximity
WHITE – Spline electrode has **suboptimal** tissue proximity
GOLD – Tissue proximity errors



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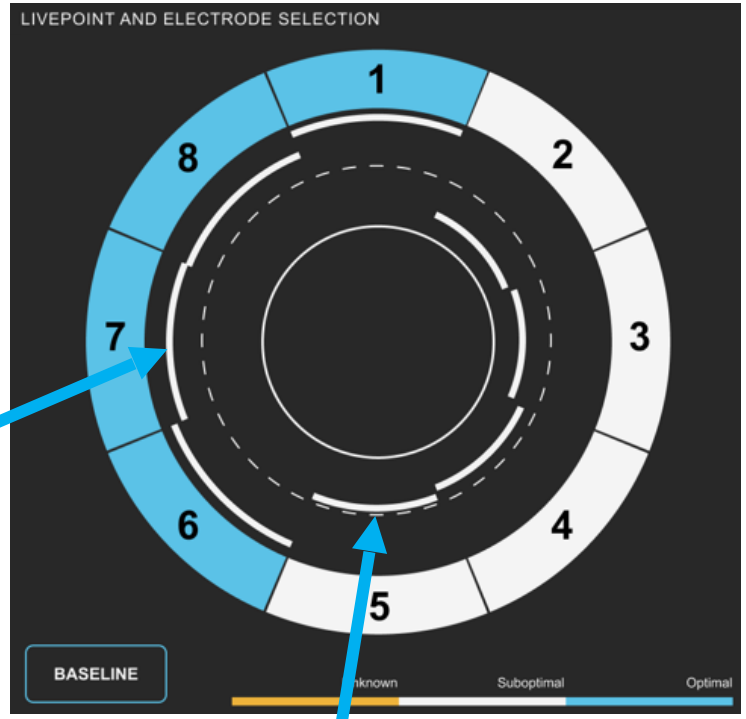


DOTTED LINE representing an impedance threshold change in the LivePoint algorithm

VOLT PFA

Manovrabilità

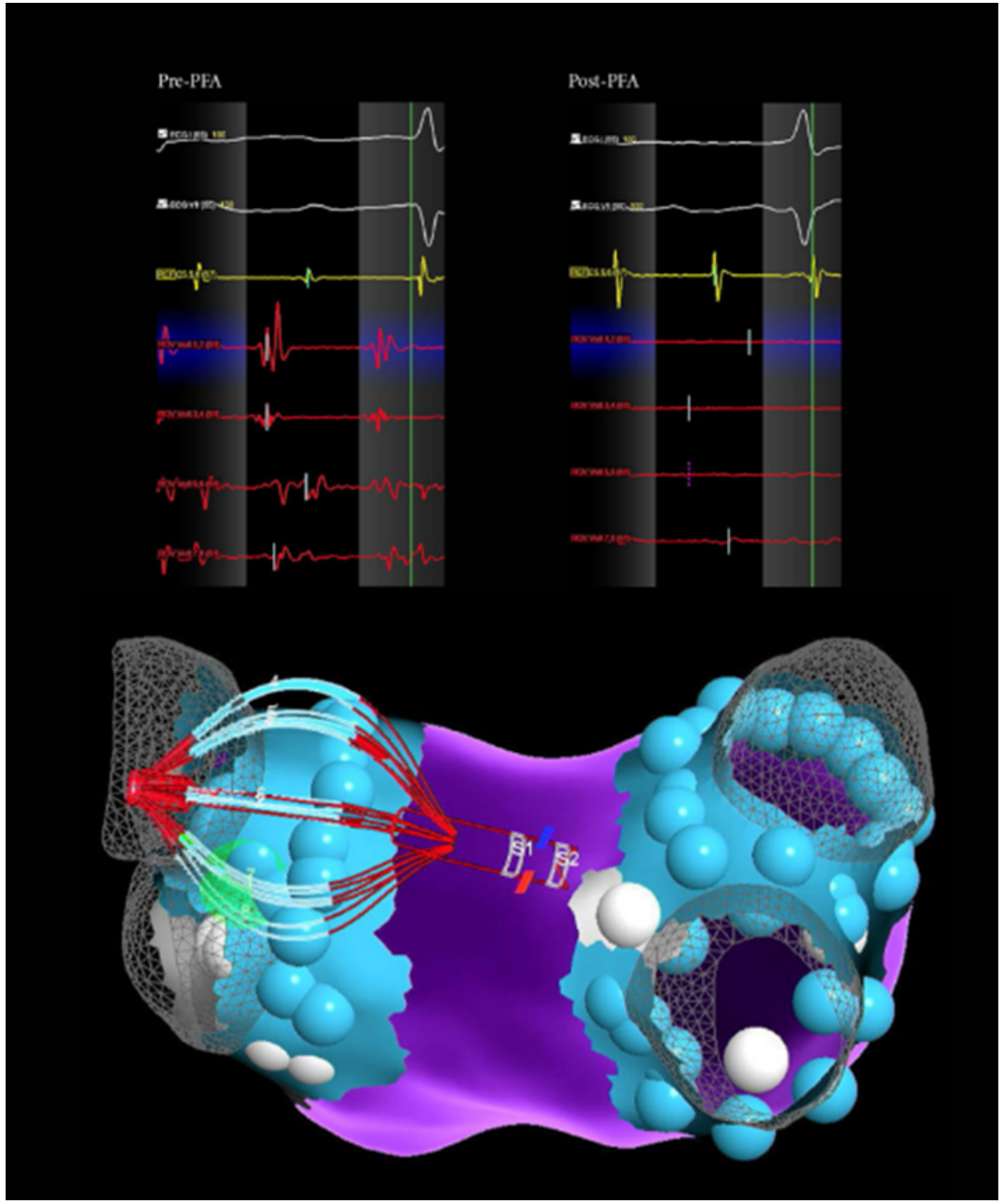
- Buona manovrabilità, anche se necessaria curva di apprendimento. Poche difficoltà per gli operatori cryo.

Sistema di mappaggio:

- EnSite X con le migliorie apportate per VOLT 2.0.

Tipo di procedura

- FA parossistiche, perplessità per utilizzo PVI+.



VARIPULSE

Manovrabilità

- Non è «over the wire»

Sistema di mappaggio

- Carto

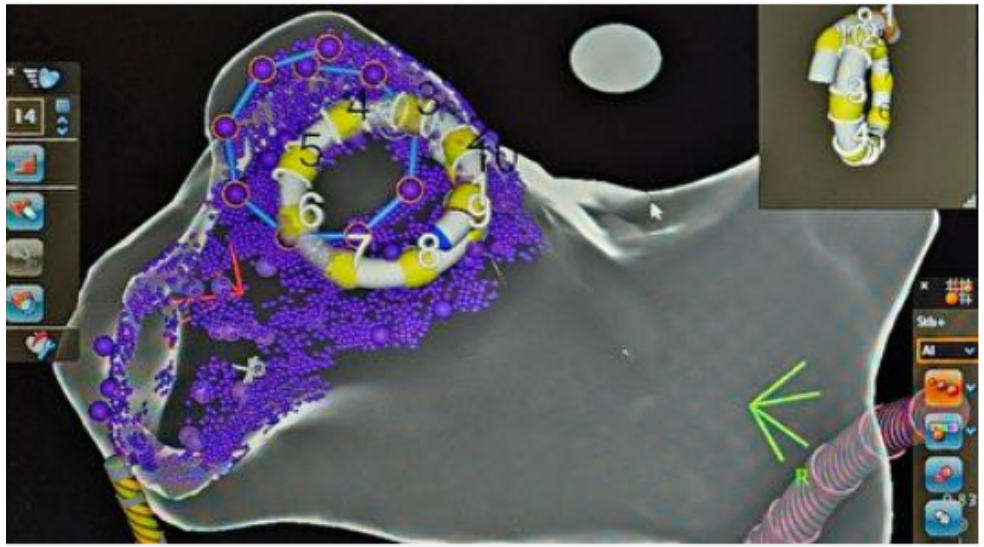
Informazione del contatto

- Basato su impedenza locale

Possibilità di fare raggi 0
Possibilità di visualizzare Vizigo

Tipo di procedura

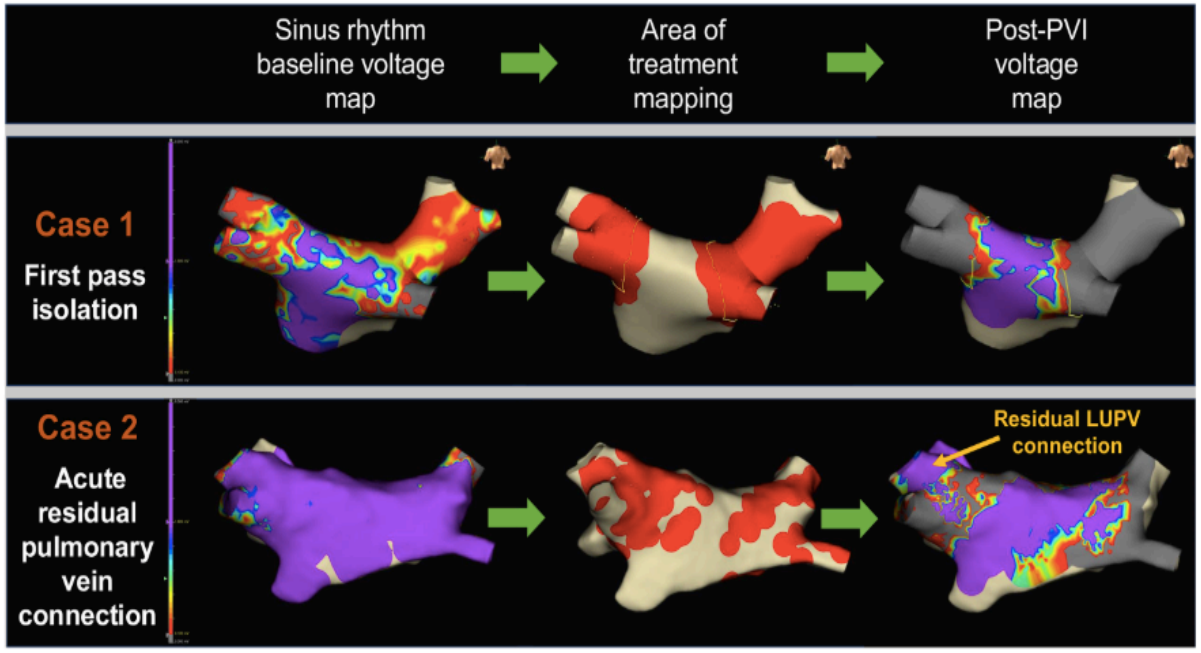
- FA parossistiche

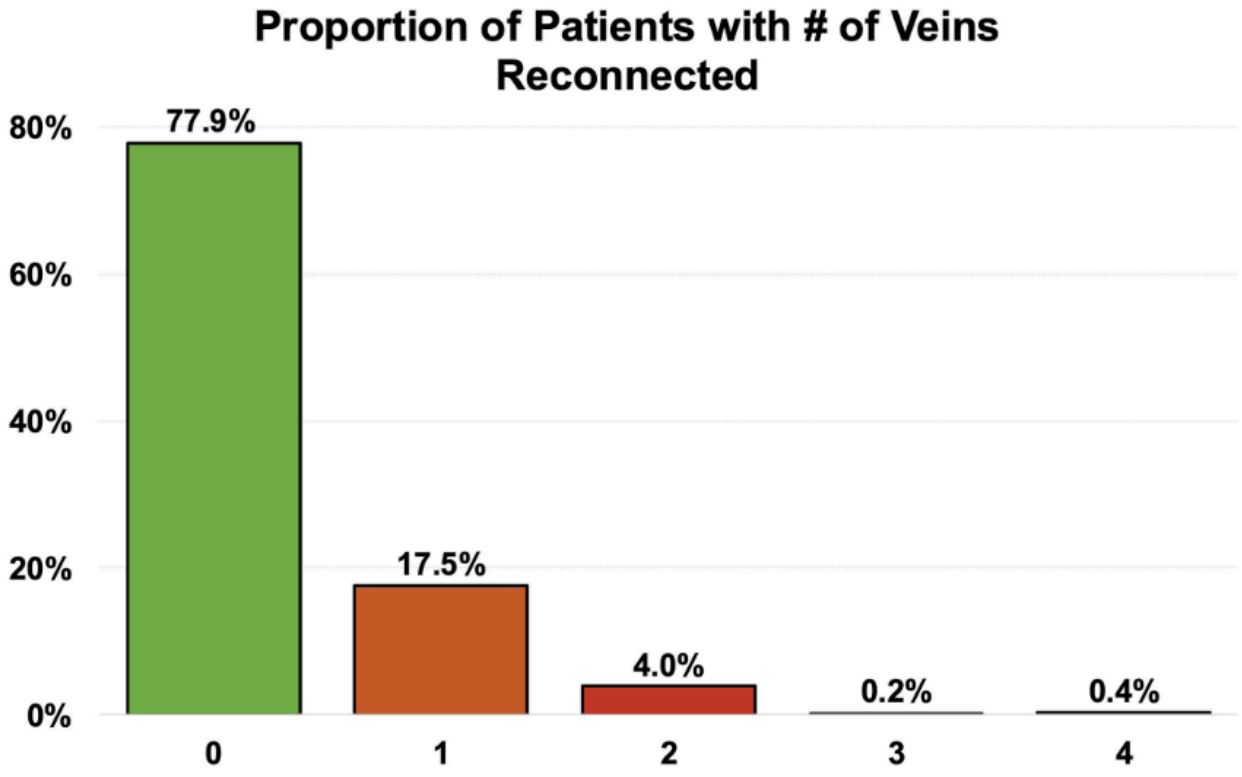


Zero X-ray exposure

The near-zero fluoroscopy PFA workflow using the PulseSelect catheter, combined with 3D-EAM and ICE, significantly reduces radiation exposure, enhances procedural safety, and maintains efficacy in AF ablation

K. Yamashita, Y. Kikuchi, K. Yoshiyama, et al. “Near-Zero Fluoroscopy Ablation Workflow With a Circular Multielectrode Pulsed-Field Ablation Catheter.” *Pacing and Clinical Electrophysiology*48, no. 10 (2025)





Mills M, Sommer P et al. **Characterization of acute residual pulmonary vein connections using electroanatomic mapping during pulsed-field ablation of atrial fibrillation**

Characterisation of Acute Residual Pulmonary Vein Connections Using Electroanatomical Mapping During Pulsed-Field Ablation of Atrial Fibrillation

Index PVI using PFA at 48 centres (89 operators) across the United States, Europe, and Australia

n = 535

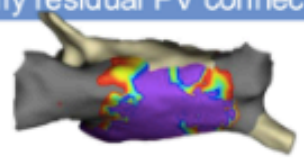
Pentaspline, variable confirmation PFA catheter

n = 375 (72.7%)

Fixed-loop PFA catheter

n = 160 (27.3%)

Acute post-ablation 3D electroanatomical mapping to identify residual PV connections



Bilateral first pass isolation (FPI) = **75.1%**

Individual PV FPI = **92.7%**

Residual **connections** more **common** in **superior PVs**

	Right	Left
Superior	7.8% (40/512)	10.1% (43/424)
Inferior	3.3% (17/512)	4.5% (19/424)

Superior PVs: 8.9%
Inferior PVs: 3.8%
P<0.001

Predictors of FPI

Standard 4-PV anatomy

Odds ratio 1.83 [95% CI 1.09-3.07]; P=0.021

Pentaspline catheter

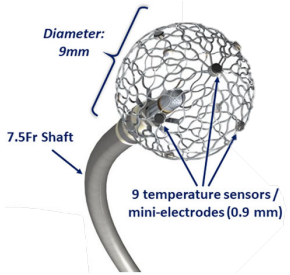
Odds ratio 3.53 [95% CI 1.81-6.87]; P<0.001

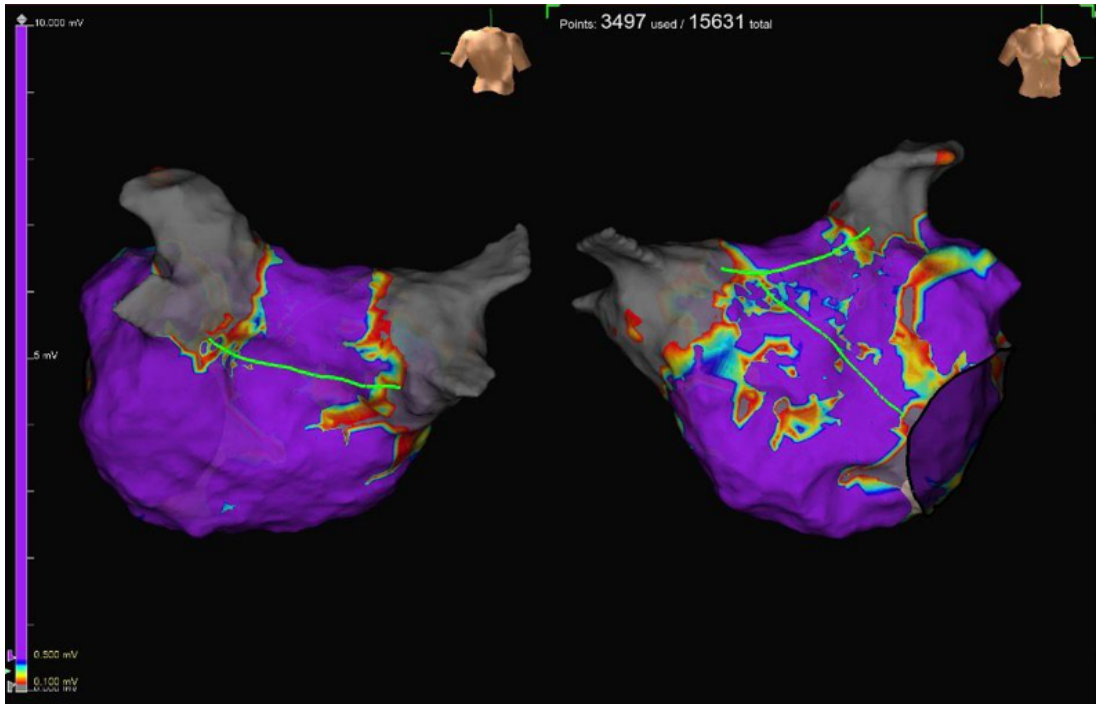
Implications

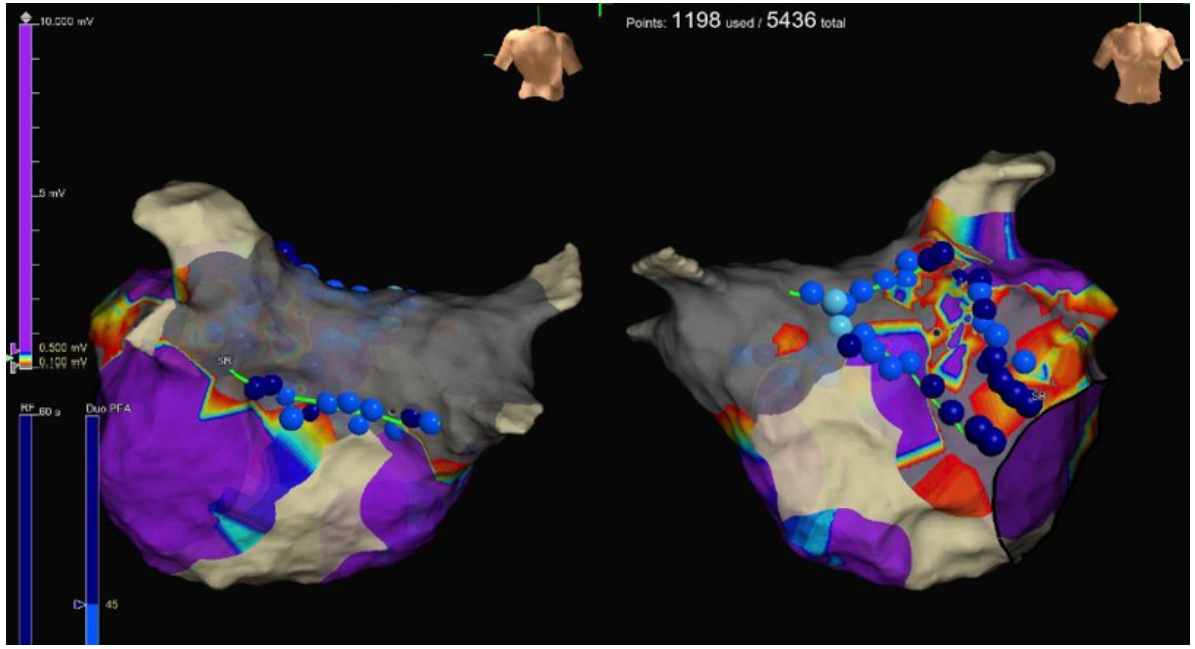
Mandatory PV checks post-PFA

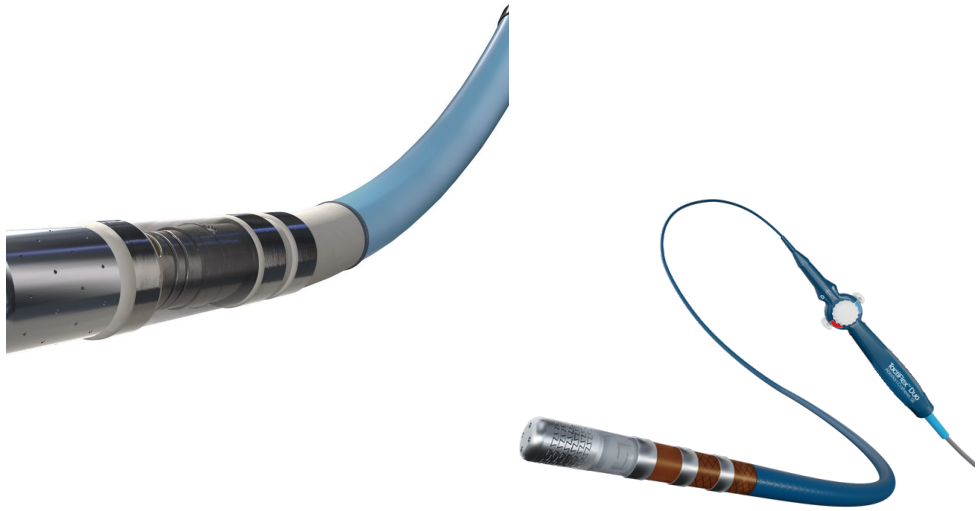
'Waiting period' to allow for identification of reversible electroporation

Cateteri focali

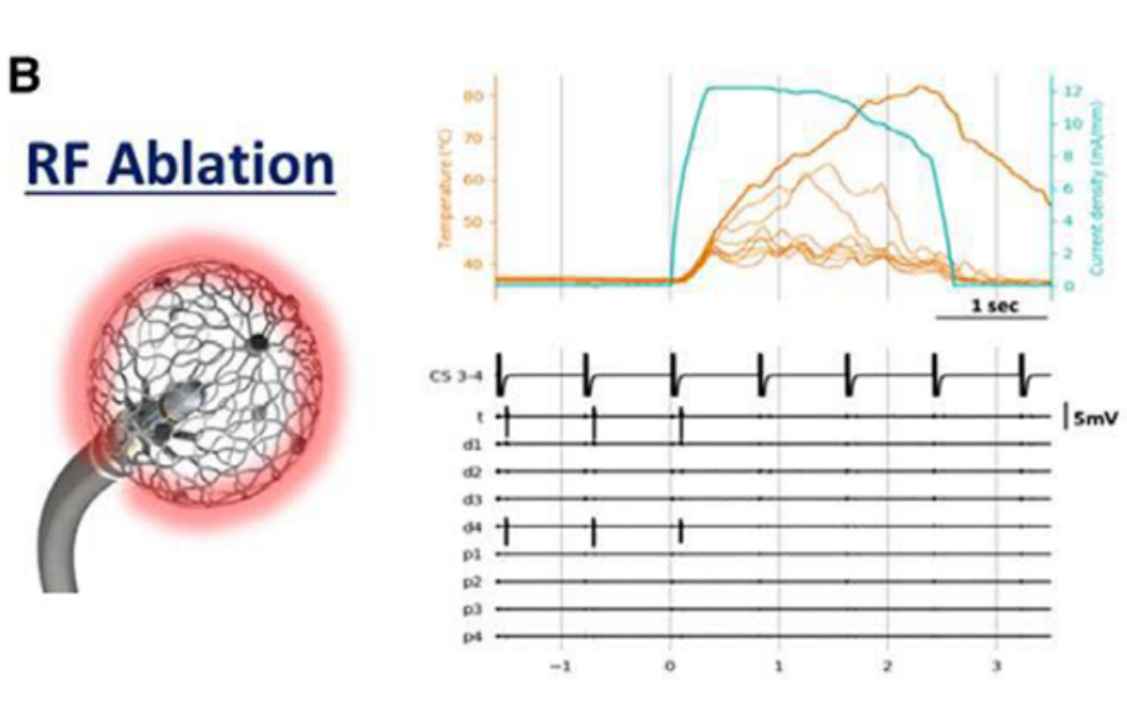


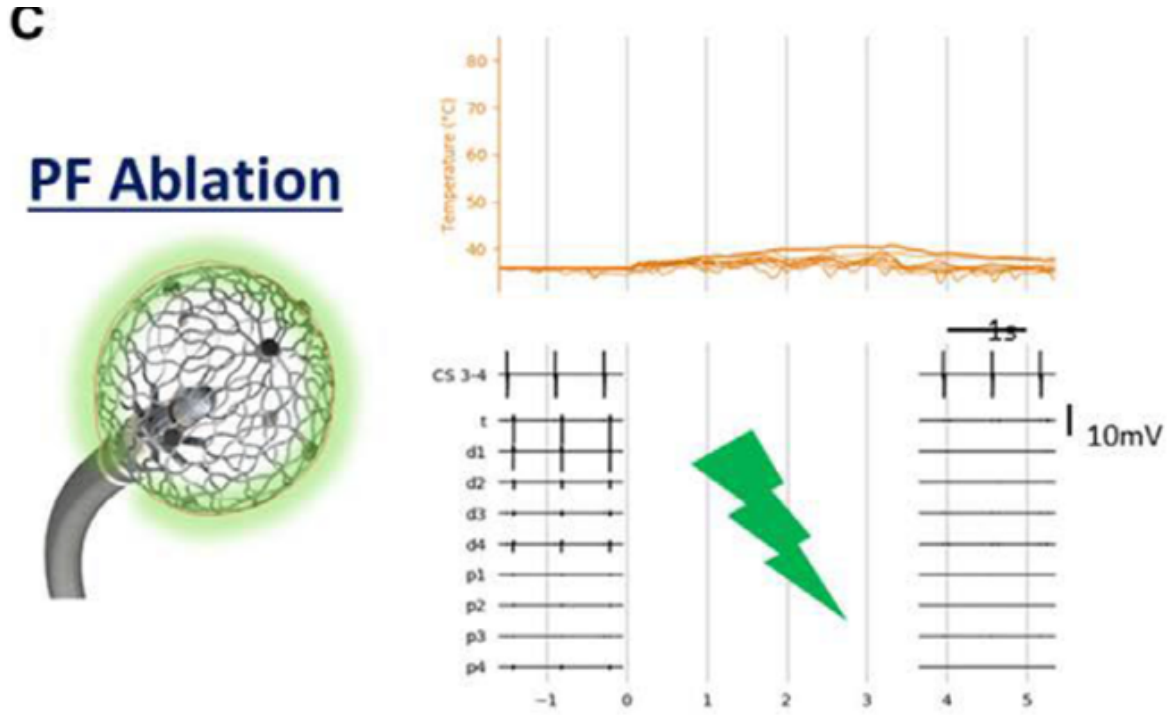






SPHERE-9





- Delivered current: 85%-100% of 13,6 mmA/mm²
- Temperature controlled: 73-75°C
- RF application = **5 sec**
- Irrigation = 30 ml/min (4 ml/min during mapping)

- PFA: 24/32 Amps
- Biphasic monopolar PF waveform **2000 V**
- PFA application= **4 sec**
- Irrigation = 15 ml/min (4 ml/min during mapping

Breaking News: Sphere-9

Circulation: Arrhythmia and Electrophysiology

RESEARCH LETTER

Initial Experience With a Dual-Energy Lattice-Tip Catheter for Ventricular Tachycardia Ablation: Procedural Feasibility and Emerging Safety Warning

Nicoletta Ventrella, MD; Mariano Sabatino, MD; Lorenzo Bianchini, MD; Marco Schiavone, MD, PhD; Andrea Dell'Aquila, MD; Fabrizio Tundo, MD, PhD; Maria Elisabetta Mancini, MD; Gianluca Pontone, MD, PhD; Claudio Tondo, MD, PhD*; Corrado Carbucicchio, MD*

Monzino hospital

- Initial experience using the Sphere-9 catheter for VT ablation
- 7 patients
  - ➢ In non-dense scar regions: RF + ev. 3PFA applications
  - ➢ In dense scar regions: 4 PFA applications
- 2 complications occurred (28.6%):
  - ➢ **Coronary spasm** during PFA in the right ventricular outflow tract (with ST-segment elevation)
  - ➢ After mitral valve repair, experienced **catheter entrapment during retrograde manipulation**

"Attention to procedural safety is critical"

- **Coronary spasm**→potential need for prophylactic angiography and nitrates.
- **Catheter entrapment**→ importance of careful manipulation, particularly during retrograde approach. (contraindicated, after mitral surgery)
- LV assist devices may cause **electromagnetic interference**,
- **Given the absence of contact-force sensing**, routine **intracardiac echocardiography is recommended** to confirm contact, monitor lesion formation, and promptly detect complications.

Grazie per l’attenzione

Dr Lorenzo Mazzocchetti
Clinica Pierangeli, Pescara