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In catheter ablation of atrial fibrillation (AF) the majority of centers uses two transseptal sheaths positioned in the left atrium. In recent years, different operators have been using a simplified ablation strategy combining a single transseptal puncture technique with 3D mapping systems and high-density catheters in AF ablation.

**Aim:** to assess the feasibility, safety and efficacy of a simplified single-puncture technique using high-resolution mapping to guide pulmonary veins isolation (PVI).

**Material and Methods:** 168 AF patients (P) (64% women, age 59±12 years, 79% paroxysmal AF, mean left ventricular ejection fraction 56%, mean left atrium volume 44 ml/m<sup>2</sup>, mean CHADS-VASC score 1.8) were included. A specified protocol was applied: segmentation of the cardiac CT scan, placement of a 10-pole catheter in the coronary sinus (CS), single transseptal puncture using a deflectable sheath (Agilis NxT, Abbott), left atrium high-density catheter voltage mapping (PentaRay, Biosense; HD Grid, Abbott; or Orion, Boston Scientific).

Mapping was done during sinus rhythm (paroxysmal AF) or in AF (persistent AF) with the following settings: LAT stability: 5ms; position stability: 5mm; density: 1mm; voltage scale: <0.2 mV.

After voltage map, the high-density mapping catheter changed with the irrigated ablation catheter to perform PVI with a wide area of circumferential ablation.

Remapping was performed to analyze signals, possible gaps and low-voltage areas. Ablation of gaps, followed by remap to confirm homogeneous low-voltage and PVI, was done.

PVI was confirmed by bi-directional block and low voltage homogeneity of PV and antrum.

## Results:

- procedure duration - 161±14 min
- X-ray time - 12±4 min
- RF time - 28±7 min

Average number of mapping points:  
MAP 1 (all P) - 1020 points (388-2200)  
MAP 2 (90% of the P) – 1009 points (244-2617)  
MAP 3 (29% of the P) - 399 points (135-1019)

There were 4 pericardial effusion (2 needed to be drained), 3 temporary right phrenic palsy, 1 transient ischemic accident and 1 bradypnea during the procedure.

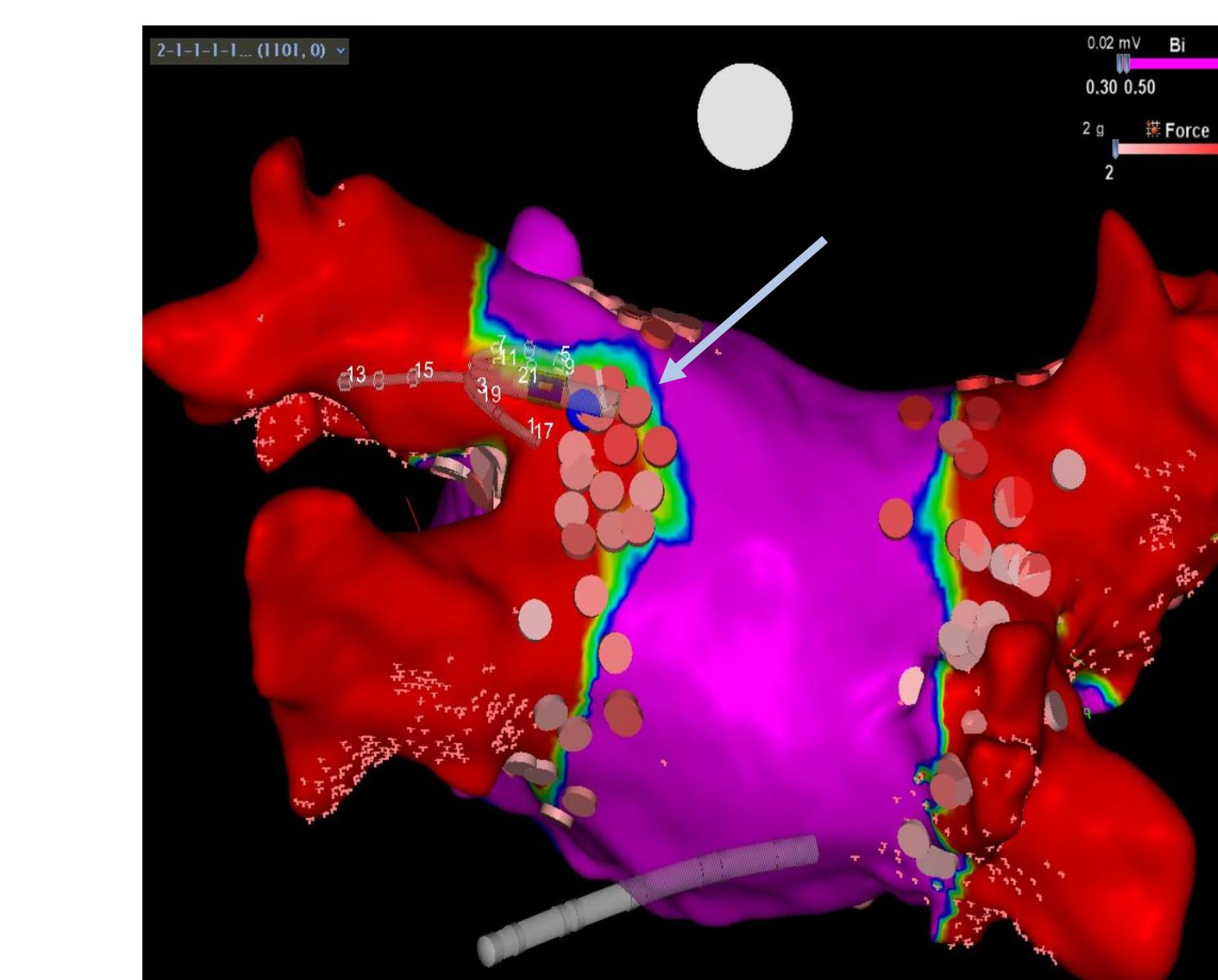
All P were in sinus rhythm after ablation.

During a mean follow-up of 24 months, 120P (71,5%) remained free from AF.

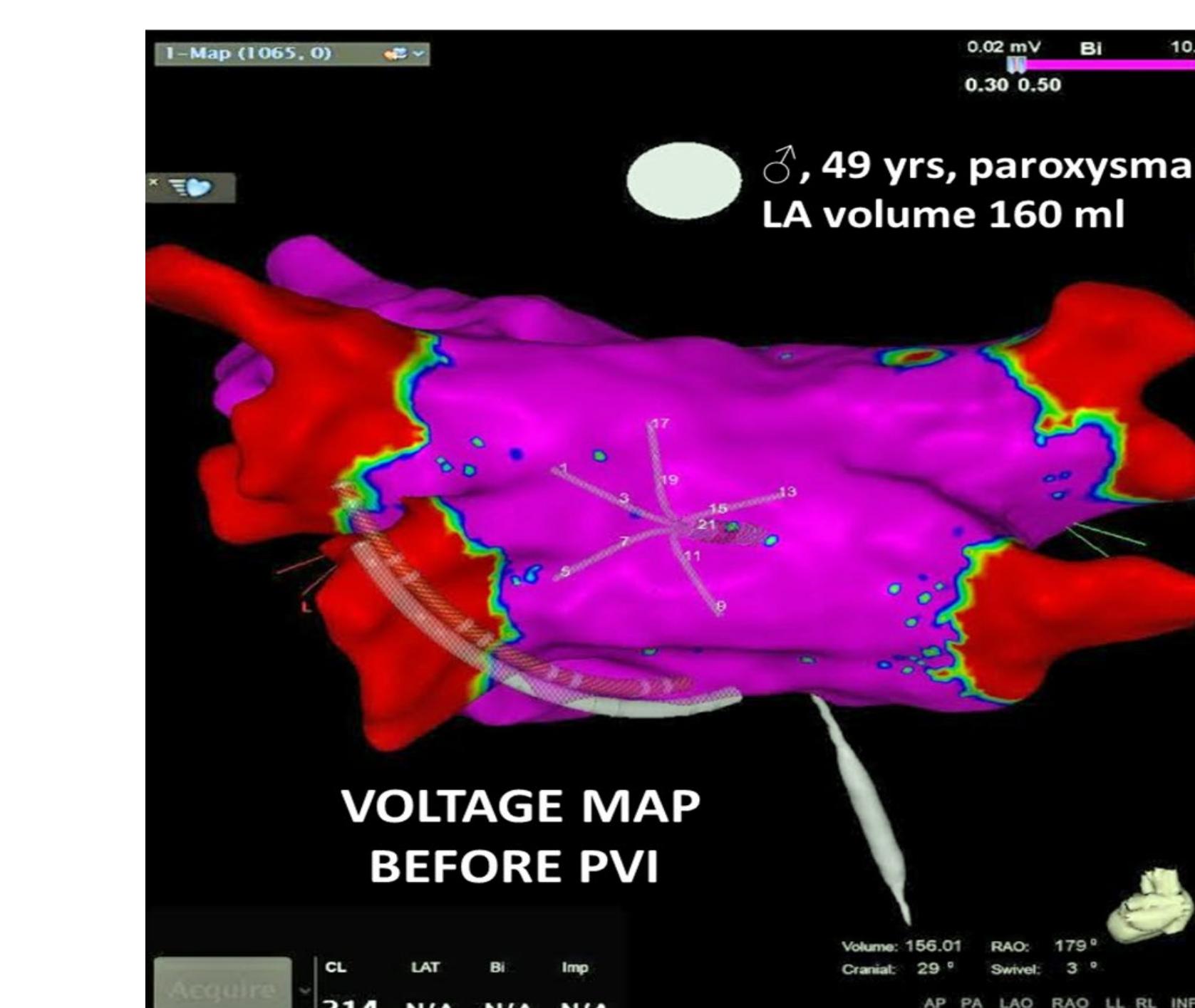
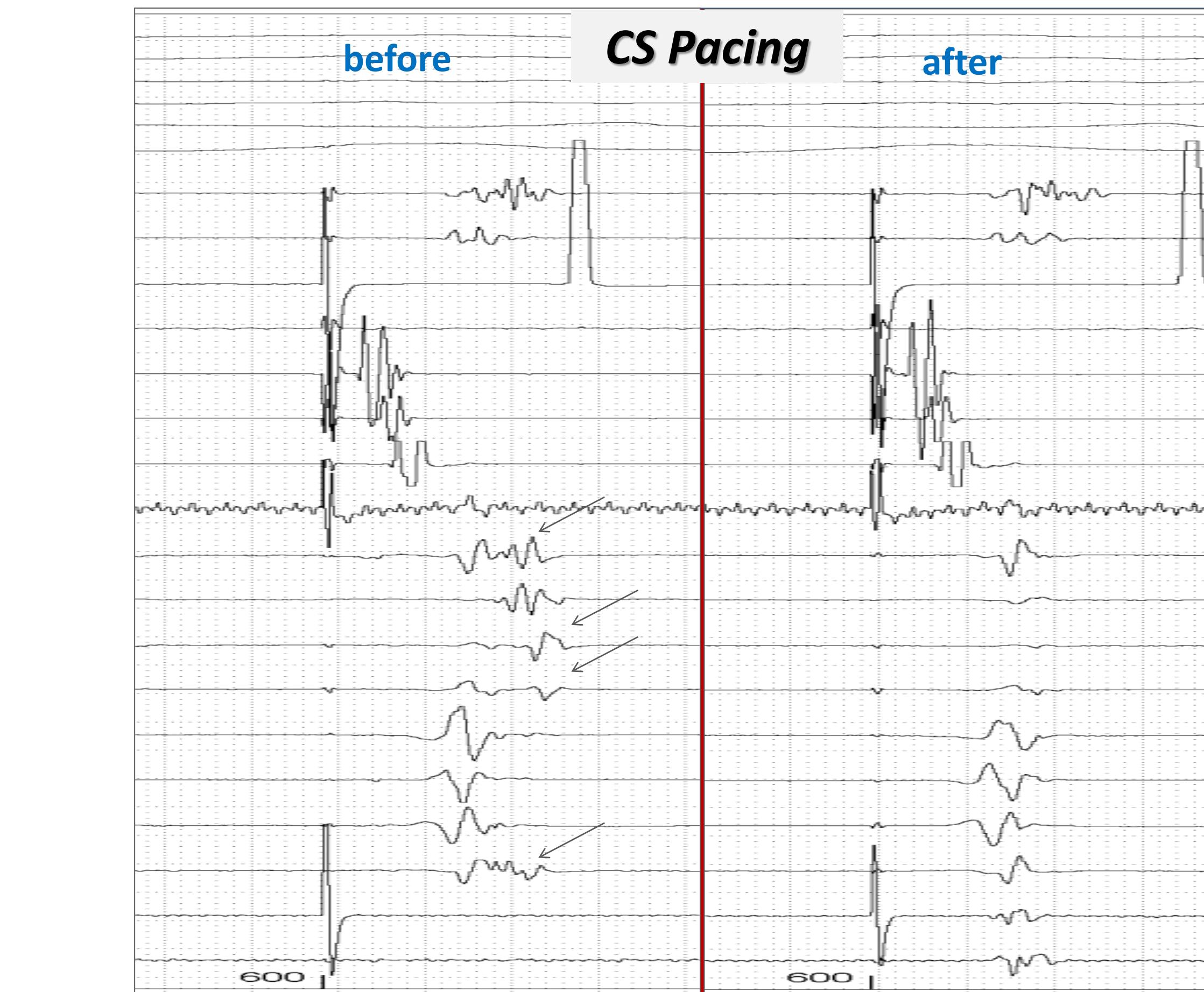
A redo ablation was performed in 33P (AF in 27 cases; atrial flutter in 6).

## Conclusion:

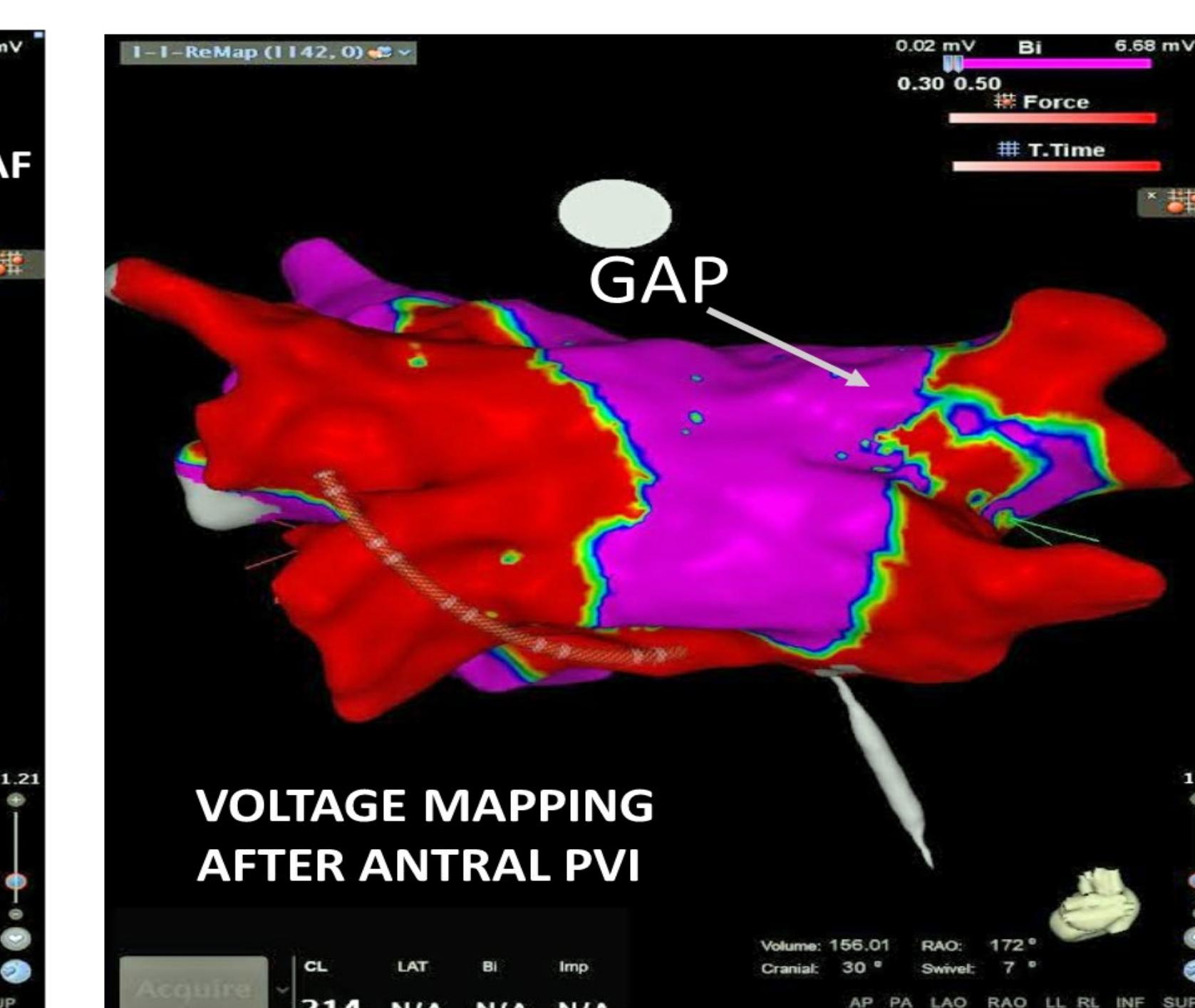
A simplified single-puncture technique using high-density multi-electrode mapping is a safe and highly successful approach for AF ablation.



High-density voltage map after PVI showing a gap in the left superior PV



VOLTAGE MAP BEFORE PVI



VOLTAGE MAPPING AFTER ANTRAL PVI

