

A New Technique for Zero Fluoroscopy Atrial Fibrillation Ablation Without the Use of Intracardiac Echocardiography

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Guarguagli et al. JACC: Clinical Electrophysiology. 2018;4(12):1647-8.

INTRODUCTION

- ▶ Efforts to reduce radiation exposure during invasive procedures include a novel three-dimensional (3D) electroanatomic mapping-based technique developed by Guarguagli et al for zero-fluoroscopy radiofrequency (RF) catheter ablation for atrial fibrillation.
- ▶ This case report describes the use of the Baylis NRG® Transseptal Needle to facilitate fluoroless left atrial access in a patient with cardiac anatomy complicated by persistent left superior caval vein (LSCV), as well as two prior right atrial flutter ablations.

METHODS

Imaging setup

- ▶ A 3D map of the right atrium and coronary sinus (CS) was created using a bidirectional CARTO® catheter (Biosense Webster, Irvine, CA), and combined with a pre-procedural cardiac magnetic resonance scan.
- ▶ The resulting map allowed visualization and localization of two decapolar reference catheters that were placed at the CS and His.

Transseptal puncture

- ▶ The mapping catheter was used to introduce a long sheath into the superior vena cava.
- ▶ The NRG® Transseptal Needle, when exposed outside the sheath, was visualized as a bipolar catheter on the CARTO® map as it was advanced towards the superior caval vein and dropped down onto the interatrial septum.
- ▶ Right and left anterior oblique projections of the map were used to confirm needle tip position on the fossa ovalis prior to applying RF energy for transseptal puncture (pulsed mode, monopolar power for 600ms).

- ▶ Intracardiac pressure was monitored from the side holes at the tip of the RF needle to confirm left atrial access.
- ▶ This procedure was performed twice for double transseptal puncture.

Direct visualization of the transseptal needle on the advanced mapping system is demonstrated in the Supplementary Video by Guarguagli et al.

RF ablation

- ▶ Mapping of the left atrium and pulmonary veins (PVs) was carried out after obtaining left atrial access.
- ▶ Ipsilateral PV isolation and complex fractionated atrial electrograms ablation in both atria, as well as LCSV, were performed.

DISCUSSION & CONCLUSIONS

- ▶ The catheter ablation procedure was completed in 146 min with no use of fluoroscopy.
- ▶ Achieving transseptal puncture by visualization of the NRG® Transseptal Needle using CARTO® electroanatomic mapping and pre-procedural cardiac magnetic resonance scans completely eliminated radiation exposure, despite the complex cardiac anatomy described in this case.

Highlights reflect information published in the referenced journal article, as well as supplementary materials, including audiovisual content.