



Highlights from:

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Guarguagli et al. JACC: Clinical Electrophysiology. Dec 2018; 4(12):1647-8. DOI: 10.1016/j.jacep.2018.08.021

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

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 **NRG™** Transseptal Needle (Baylis Medical®) to facilitate fluoroscopy-free 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), 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 the bundle of 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 600 ms).
- ▶ 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.

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 LSCV, were performed.

DISCUSSION AND 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.

* A wholly-owned subsidiary of Boston Scientific Corporation.

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

Brief Summary | **NRG™** Transseptal Needle

CAUTION: Federal law (USA) restricts this device to sale by or on the order of a physician. Rx only. Prior to use, please see the complete "Instructions for Use" for more information on Indications, Contraindications, Warnings, Precautions, Adverse Events, and Operator's Instructions.

INDICATIONS FOR USE: The NRG™ Transseptal Needle is used to create an atrial septal defect in the heart. Secondary indications include monitoring intracardiac pressures, sampling blood, and infusing solutions.

CONTRAINDICATIONS: The NRG™ Transseptal Needle is not recommended for use with any conditions that do not require cutting or coagulation of soft tissue.

WARNINGS: • Laboratory staff and patients can undergo significant x-ray exposure during radiofrequency puncture procedures due to the continuous usage of fluoroscopic imaging. This exposure can result in acute radiation injury as well as increased risk for somatic and genetic effects. Therefore, adequate measures must be taken to minimize this exposure. • The NRG™ Transseptal Needle is intended for single patient use only. Do not attempt to sterilize and reuse the needle. Reuse can cause the patient injury and/or the communication of infectious disease(s) from one patient to another. Failure to do so may result in patient complications. • The NRG™ Transseptal Needle must be used with the BMC Connector Cable. Attempts to use it with other connector cables can result in electrocution of the patient and/or operator.

PRECAUTIONS: • Placement of the dispersive electrode on the thigh or hip could be associated with higher impedance. • In order to prevent the risk of ignition make sure that flammable material is not present in the room during RF power application. • Careful needle manipulation must be performed to avoid cardiac damage, or tamponade. Needle advancement should be done under image guidance. If resistance is encountered, DO NOT use excessive force to advance or withdraw the needle. • During power delivery, the patient should not be allowed to come in contact with ground metal surfaces. • Thoroughly flush the NRG™ Transseptal Needle with heparinized saline solution prior to use. • If using electroanatomical mapping guidance it is recommended to confirm tip placement on the fossa ovalis and septal tenting before RF puncture with graphic imaging or another imaging modality.

ADVERSE EVENTS: Adverse events that may occur while using the Baylis Medical Radiofrequency Puncture System include: • Tamponade • Sepsis/Infection • Thromboembolic episodes • Vessel perforation • Atrial Fibrillation • Myocardial Infarction • Vessel spasm • Sustained arrhythmias • Atrial Flutter • Hemorrhage • Vascular thrombosis • Perforation of the myocardium • Hematoma • Allergic reaction to contrast medium • Ventricular Tachycardia • Pain and Tenderness • Thermal damage to tissue • Arteriovenous fistula • Pericardial Effusion

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